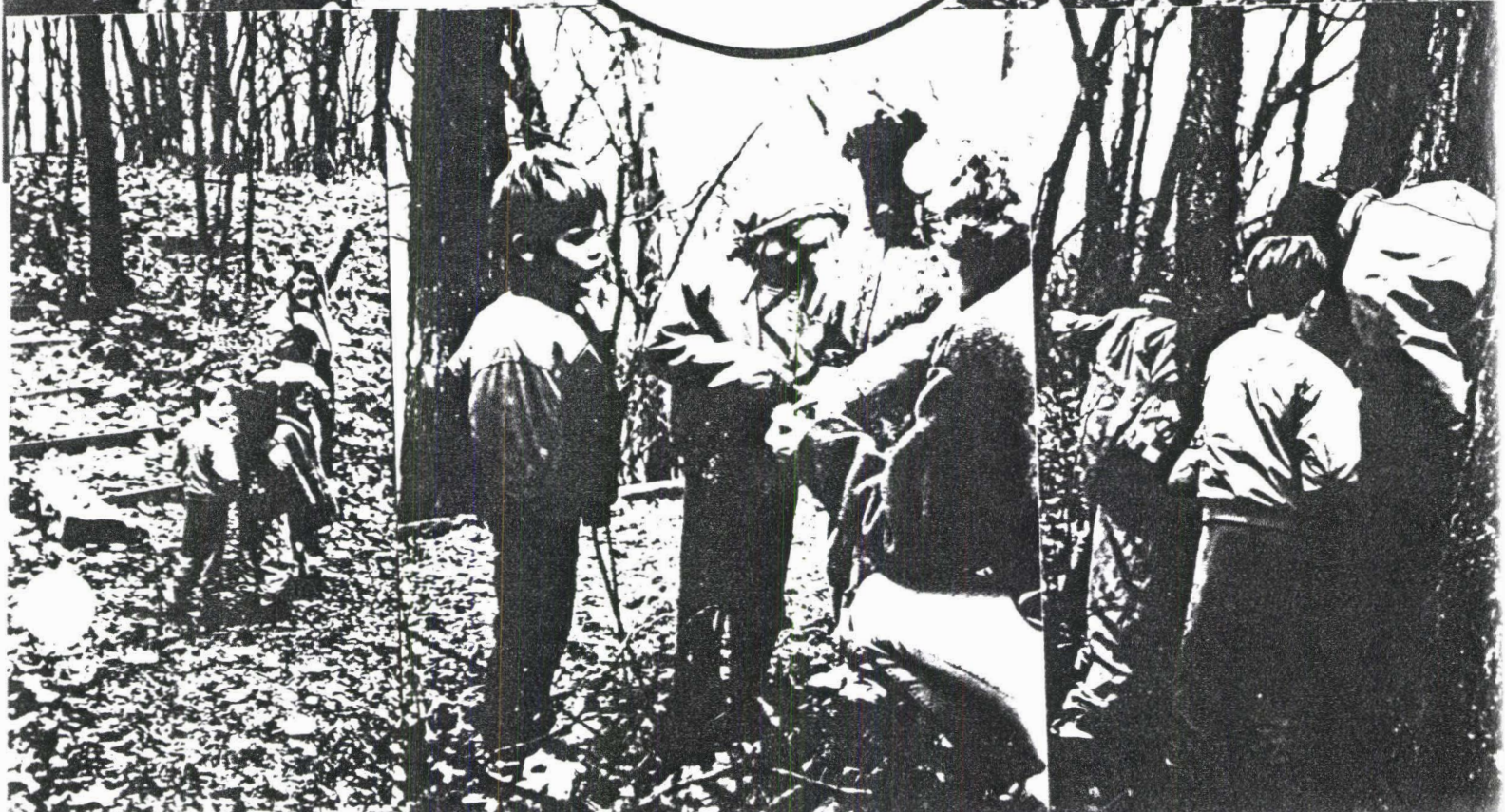
"SHOW-ME" PROJECT LEARNING TREE



"SHOW-ME" PROJECT LEARNING TREE

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Clemson Class of 1991

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I would like to express sincere gratitude to Felix Seda for his personal committment to the production and editing of the video for the final presentation of this project. Due to his personal dedication to this project, Felix donated many hours at home and in various locations to see that it was completed on time and of the highest quality possible. Felix is a true example of loyalty in action. Thank you Felix for your diligence and care on this project, with no gaurantee of a return for your efforts.

There is one who truly deserves all the honor and credit on this project, on both the write-up and the video, and that is the Lord God Almighty from which all good and perfect gifts come. The Lord directed me at every turn, guiding me to the proper contacts, channels, subject areas and sources for information, all in His perfect time. The Lord bestowed upon me His peace which passes all understanding, and put within my heart joy unspeakable and full of glory. On the outset, the likelyhood that this project would be completed on time and with the desired outcome, was almost nonexistent. All during the process, one roadblock after another surfaced, each one attempting to overshadow the joy I had, with gloom and doom, but God continued to assure me that all was well and in His complete control. God is true to His word and I thank Him for His faithfulness. Should any good come out of this project, God deserves all the praise, honor, glory and thanks, for I am but an instrument in the Master's loving, capable, and gracious hands.

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ABSTRACT

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TITLE: *"SHOW-ME" PROJECT LEARNING TREE*

Project Learning Tree (PLT) is an award-winning environmental education program that has been adopted for use in 49 American states and 7 foreign countries. Missouri is the only American state that does not have a PLT program statewide. A research study was conducted by surveying PLT coordinators across the United States and in 7 foreign countries, teachers and educators in 21 American states, and children and young people in 21 American states. The survey was an opinion-based study to determine the three most beneficial aspects of PLT from each category as previously listed. The results of the study reveal that the natural resource professionals believe the most beneficial aspect of PLT is that it *teaches critical thinking skills* effectively; teachers and educators believe the most beneficial aspects are: it *suppliments easily* into existing curricula and children and young people like PLT because *it is fun*. This report cites and discusses the results of other surveys and reports conducted on PLT with regard to the effects PLT has on students, the learning process, attitudes and reasoning skills, as well as the attitudes of teachers on teaching environmental education in addition to required curricula. This report also discusses the National Environmental Education Act (NEEA) and the effects it could have on the adoption of PLT in Missouri.

I - *INTRODUCTION*

"The very idea that peoples' opinions count - in the markets, in the work place, in the voting booth - is America's great gift to the world." John Paluszer, as printed in April 1992 Readers Digest.

The purpose of this research is to gather and discuss the opinions of natural resource professionals, teachers, educators, children, and young people across the United States and in seven foreign countries, regarding Project Learning Tree (PLT), an environmental education program that has been available for use since 1976. PLT is an award-winning program designed for teachers and other educators working with students in primary through the 12th grade.

- PLT uses the forest as a "window" into the natural world, helping young people gain an awareness and knowledge of the world around them as well as their place within it.

- PLT helps to prepare students to make wise decisions about conservation practices and resource use.

- PLT has been adopted by 49 American states and by the countries of Sweden, Finland, Mexico, Guam, American Samoa, the Commonwealth of Northern Marianna Islands, and 5 Canadian provinces.

Missouri is the only American state that does not have a PLT program. There are three possible reasons why Missouri has not adopted PLT:

- The Missouri Department of Conservation (MDC) has been at work since 1941 implementing and managing a state conservation education program that is second to none in the nation.

- With all of the effort MDC has put into the existing conservation education program over the years, many say "Why fix it if it ain't broke."

- Missouri is the "SHOW-ME" state and many people want to see the facts about PLT before supporting it completely.

This project will yield objective data and information from a wide cross-section of knowledgeable sources in an effort to identify the three most beneficial aspects of PLT. After determining the beneficial aspects of PLT, an attempt will be made to present the facts from other research conducted with regard to the effects of said program on children and the learning process. After all, the young people of Missouri are the ones who will ultimately suffer or benefit in the end.

At the present time, MDC is considering the adoption of PLT for the state. MDC is the most logical lead agency because of the already-existing programs, and MDC personnel are most familiar with the process of instituting and maintaining a statewide environmental education program.

II - *CURRENT SITUATION*

MDC's Education Section currently has a very extensive environmental education program established in Missouri schools. Since 1941, MDC has consistently supported this formal conservation education program in the state system of public, private, parochial, and home schools, as required by law for youth groups. The mission statement for the Education Section of MDC is "To provide user-friendly, formal education programs for education professionals, youth leaders, students, parents, and citizens about forest, fish, and wildlife resources and the ecological base which supports them." The Education Section's goal is "To continue designing and providing programs for citizens to develop a conservation ethic which influences: (1) social, political, and economic decisions affecting natural resources and ecological systems; (2) respect for the ethical use of resources; (3) harvesting as a management tool as it relates to forest, fish, and wildlife resources; and (4) teaching the interrelationships of all natural resources." (MDC 1991)

The major responsibilities and activities of the Conservation Education Division include:

- Assisting public, private, and parochial school administrators, classroom teachers, college and university professors, leaders of youth organizations, parents, and citizens in establishing educational programs which offer Missourians opportunities to develop conservation practices and ethics.

- Producing and disseminating conservation education publications, audiovisual materials, and other conservation curriculum teaching aids.

- Utilizing available media to enhance public awareness, knowledge, and commitment to the conservation of Missouri's forest, fish, and wildlife resources.

- Working cooperatively with the Missouri Department of Elementary and Secondary Education; the Coordinating Board for Higher Education; and individual schools, colleges, and universities throughout the state in the production and use of multidisciplinary conservation education curricula.

- Teaching in-service credit courses, workshops, and seminars to enhance the ability of educators, youth leaders, and parents to teach young people about the wise use of Missouri's forests, fish, wildlife, and related natural resources.

MDC offers different types of services in the area of conservation education, each of which are briefly summarized as follows:

- *Teacher/Youth Leader Training*: Conservation education consultants offer courses and workshops to help educators improve their ability to teach young people about wise resource use. Participants study conservation principles and learn techniques of teaching conservation via outdoor field investigations and other methods. Opportunities abound for teachers and youth leaders to learn about conservation, ranging from 1-day short courses to full-semester, college-credit offerings. Some courses are conducted in local school districts, while others may be held at a department facility or a nearby college or university.

- *Conservation Seeds Program* : This program promotes conservation awareness and is designed for 3- to 5-year old children. Its purpose is to help teachers of early childhood students heighten their students awareness of nature and conservation. Teaching from the whole environment is encouraged wherever possible, to give the children every opportunity to grasp a new concept. The Conservation Seeds Program includes a 200-page activity book, seasonal posters depicting examples of land and resource uses, and animal and habitat cards.

- "*Learning With Otis*" *Program*: Teachers and students in grades 1 through 6 and special education will meet a conservation friend as they learn with Otis. Otis, a cartoon deer mouse, is the mascot for the Department's, "Learning with Otis" Program. The materials provide teachers with conservation education activities in the areas of ecology, geology, soil, land use, conservation ethics, wildlife, plants, and water and aquatic life.

- *Missouri Conservation Frontiers Program*: This program is activity-oriented, emphasizing the conservation of natural resources, and most projects deal with renewable resources (i.e., wildlife, fish, and forests). The program is designed primarily for the young people of Missouri, but citizens of all ages are urged to learn and become involved in this challenging conservation effort. Also, the program provides a system of activities and awards which can be adapted and utilized by families and youth groups in the state.

- *Conservation Education Series*: Junior and senior high-school teachers may order instructional units on conservation topics for specific curricular areas. These units provide background information, lesson plans, quizzes, and line art for overhead transparencies. Each unit emphasizes Missouri's resources.

- *The Conservation Connection*: Designed for junior and senior high-school teachers, The Conservation Connection is a quarterly newsletter designed to

help teachers keep up-to-date on conservation materials and programs offered by MDC.

- *Aquatic Education Program*: This is a program for certain instructors and young people, offering in-class instruction on basic conservation concepts, aquatic ecology, and water safety. In addition, fishing techniques are taught and fishing opportunities are provided. Urban fishing programs are offered each summer in the cities of Kansas City, St. Louis, and Springfield. Urban youth receive instructions in aquatic ecology, fishing techniques, and outdoor ethics then go fishing in a stocked lake. This program is also offered for the physically and mentally handicapped of all ages.

- *Conservation Honors Program*: This program is designed for high-school juniors who are interested in any aspect of natural resources conservation. The curriculum was developed by the University of Missouri-Columbia's School of Forestry/ Fisheries and Wildlife and MDC. Students selected for the program participate in a 1-week educational experience presented by personnel from the University of Missouri and MDC. At completion of the program, they earn 2-hours advanced college credit.

- *Conservation in Agricultural Education Program*: Under this program, the Department's Education Section prepares conservation material packets and videos for use at the high-school teaching level. These materials are made available to agriculture teachers through their established curriculum system.

- *Outdoor Classrooms*: These on-campus sites enhance the study of ecological principles and conservation practices. Conservation consultants offer suggestions for developing and using outdoor classrooms.

- *Special Program Materials*: Teaching aids, from posters to information bulletins, are available to teachers and youth leaders. (MDC 1991)

Currently, the Missouri Department of Education works closely with MDC on the aforementioned programs. They are all in compliance with state laws, mandates, and educational requirements governing the state of Missouri.

The Kansas City School District, Kansas City, Missouri, is currently operating under the Magnet Theme, in which specific subject themes are identified for specific schools. There are 20 different magnet themes (i.e., Arts and Sciences, Communications and Writing, Environmental Science, Military Science, International Studies, etc.) in the school district, with 64 participating schools. The objective of the Magnet Theme theory is to incorporate the theme into every aspect of a school curriculum; thus, an integrated course of study is imperative. The environmental magnet schools in Kansas City have been using "Project WILD" for several years and just began with

PLT in 1991. The overwhelming response from teachers and educators there is that PLT makes the task of integrating environmental education into the standard curriculum easy. It has already been done by the American Forest Council and the Western Regional Environmental Education Council (WREEC) within the PLT Guides.

Eight specific organizations have expressed an interest in participating in the introduction, implementation, and management of PLT in Missouri, none of which can commit to sponsoring the program individually, but would seriously consider working in cooperation with one or more groups.

III - *LITERATURE REVIEW*

A literature review was conducted in an effort to identify any earlier research that may have been done on PLT. The Clemson University Library conducted the following database searches: AGRICOLA, EIRC, and DORIS. The University of West Virginia's Morgantown Library conducted an EIRC search and an FS INFO search. The Society of American Foresters was also contacted and a search of their records ensued. All of the above sources proved to be unsuccessful. Finally the American Forest Council in Washington D.C. was contacted. This is the nonprofit organization that sponsers PLT nationwide and their response included several unpublished reports.

Although PLT is supported in 49 states and several other countries, very little has been published about the program. However, it is possible to find references and support for the program in Forestry Journals and Newsletters.

Several unpublished reports were obtained from individual researchers and/or the university where the research was conducted, as well as through the American Forest Council Office, Washington, D.C.

Publications were provided by the U.S. Environmental Protection Agency (EPA), including the EPA Journal, as well as documentation on the NEEA and current policy on same.

Sources of publications were:

- Texas A&M University
- University of Tennessee
- American Forest Council
- U.S. Environmental Protection Agency
- MDC, Forestry Division
- Clemson Short Course Handouts

- Publications obtained through Clemson Short Course contacts
- U.S. Department of Agriculture Forest Service

IV - *RESEARCH METHODS*

In October 1991, letters were mailed to the 14 districts of MDC's Education Section, as well as three letters to the main headquarters in Jefferson City, Missouri (see appendix B). Each letter stated that a research project on natural resource education was underway. A request was made for information as follows:

- Curriculum used by the teacher as a baseline as developed by MDC.

- Manner in which the schools utilize the program, to the best of MDC's knowledge (i.e., mandatory or teachers preference).

- Examples (3 to 5) of the teaching materials provided by MDC (i.e., coloring books, fire safety comic books, posters, etc.)

- Overall objective of the specific program with regard to the effects it should produce in school-age children, from MDC's point of view (i.e., kids should not play with matches, etc.)

I received one response from the headquarters in Jefferson City in the form of a pamphlet describing the educational programs MDC has established in the state, as well as a 5-year plan for MDC education.

In October 1991, phone contact was made with Kathy McGlauflin, National PLT Coordinator/contact person. She provided the names and addresses of the contact person(s) in each state and country. Letters were mailed to 103 contacts within the United States and the countries of Finland, Sweden, Guam, Mexico, Canada, the Commonwealth of Northern Mariana Islands, and American Samoa. Each letter stated that a research project was underway to determine the three most beneficial aspects of PLT from the standpoint of natural resource professionals, teachers/educators, and children and young people (see appendix A). Requested information follows:

- Their personal opinion to the question: "What do you feel is the single most-beneficial aspect of PLT?"

- Names, addresses, and telephone numbers of 5 to 10 teachers/educators, naturalists, etc., that they felt certain were using PLT activities on a regular basis in their state or country.

- A copy of their state brochure and other publications regarding PLT and a copy of any PLT videos that they might have.

I received 72 responses which included names of teachers/educators/naturalists, and their addresses. I also received five videos for use in the production of my own video for this project and ultimately for future use by the Forest Service.

In November 1991, letters were mailed to 255 teachers/educators/naturalists (see appendix C). Again the letters stated that a research project was underway to determine the three most beneficial aspects of PLT and the following information was requested:

- Their personal opinion to the question: What do you feel is the single most beneficial aspect of PLT?

- A request that they poll their classes and complete and return the survey forms (see appendix D) for as many students as possible.

- Requested volunteers from surrounding states (Illinois, Kansas, Oklahoma, and Arkansas) participate in the production of an 8-minute video to display the results of this research.

I received 143 responses from teachers and educators in 21 American states and 394 responses from children and young people in the same states.

In January 1992, phone contact was made with Bruce Palmer, an MDC representative who is listed as a state contact for PLT in Missouri. He provided a set of curriculum books and other educational materials, which were not forthcomming from any of the other educational districts or the headquarters, as had been requested.

In January 1992, letters were mailed to 287 teachers/educators in the state of Missouri (see appendix E). The letters stated that a research project was underway and requested information as follows:

- Teachers complete and return the survey form (see appendix F) in the self-addressed, postage-paid envelope.

- Teachers duplicate the survey form (see appendix G) for their classes and encourage completion of it by as many students as possible or desirable.

I received 209 teacher responses and 1,756 student survey forms.

Phone contact was established with nine organizations to determine the official position of each on the adoption of PLT in Missouri, and their willingness/ unwillingness

to assist other organizations in the implementation and management of PLT in Missouri, should it be adopted. The groups contacted are as follows:

- Society of American Foresters
- Missouri Forest Products Association
- University of Missouri-Columbia, Natural Resources Department
- Lincoln University
- Missouri Department of Education
- United States Soil Conservation Service (SCS)
- Association of Soil and Water Conservation Districts
- Powell Gardens, Springfield, Missouri
- Missouri Department of Conservation

Unsuccessful phone attempts were made to contact the State Forester and the administrator of the St. Louis Botanical Gardens.

Phone contact was made with the U.S. EPA, to obtain information about the NEEA, passed into law October 1990. As a result of NEEA, funds have now become available for environmental education (see appendix H).

V - *RESULTS AND CONCLUSIONS*

The data received were compiled according to personal opinions and classified into 10 major groups for the natural resource professionals, 10 major groups for teachers/ educators, and 7 major groups for children and young people.

The groups were then organized by the number of responses by category group (i.e., category group 1 - natural resource professionals, category group 2 - teachers/ educators, category group 3 - children and young people). All responses were in the words of the responder and were thus subject to some minor interpretation. The breakdown of major groups and number of responses for each may be found in tables 1, 3, and 5.

TABLE 1. Natural Resource Professionals

Category	No. of Responses	Percent of Total
Teaches critical thinking	14	20
Easily suppliments into existing curriculum	11	16
Uses hands-on approach	10	14
Flexible	7	9
Interdisciplinary	6	8
Source of information	6	8
Can reach more people than resource professionals alone	6	7
Brings educators & resource personnel together	5	7
Can be used easily by anyone anywhere	4	7
Facilitates a learning environment	3	4

TABLE 2. Natural Resource Professionals

	Percentage
Teaches critical thinking	20
Suppliments easily	16
Uses Hands-on	14
Other	50

Of the 103 natural resource professionals surveyed, the 72 responses were submitted by representatives from the United States and Canada. The number one choice from this category group is: *PLT teaches critical thinking skills* (20% of the responses). The second and third choices are: PLT supplements easily (16%), and PLT uses hands-on activities/learning techniques (14%) (see Table 2). The remaining 50% of the responses are broken down into categories comprising 10% or less (see Table 1).

TABLE 3. Teachers and Educators

	No. of Responses	Percent of Total
Easily integrates into curriculum	58	41
Teaches critical thinking	16	11
Children learn	15	11
Uses hands-on approach	14	10
Fun	11	7
Children are actively involved	10	7
Uses outdoors	7	5
Good variety	7	5
Credible, tested, supported	3	2
Unbiased	2	1

TABLE 4. Teachers and Educators

	Percentage
Easily intergrates	41
Critical thinking	11
Children learn	11
Hands-on	10
Other	27

There were 255 teachers/educators surveyed with 143 responses from 24 different states in the United States. The number one choice from this category group is: *PLT easily suppliments into existing curriculum and lesson plans* (41% of the responses). The second, third, and fourth choices are PLT teaches critical thinking skills (11%), children learn with PLT (11%), and PLT uses hands-on activities/learning techniques (10%) (see Table 4).

TABLE 5. Children and Young People

	No. of Responses	Percent of Total
Fun	149	38
I learn more/easier/interesting	122	31
Going outside	64	16
Doing/Experimenting/Exploring	23	6
I learn to think through things/ working in groups/see what is around me	17	4
I can express myself	10	3
I learn that I can do something for the earth	9	2

TABLE 6. Children and Young People

	Percentage
Fun	11
I learn more/easy	31
Going outside	16
Other	15

There were 425 students/young people surveyed by their teachers/educators/youth leaders in 24 different states in the United States, with 394 responses. The number one choice from this category group is: *PLT is fun* (38% of the responses). The second and third choices are PLT helps me learn more and easier (31%), and we get to go outside with PLT activities (16%) (see Table 6).

Of the nine groups/agencies contacted by phone, eight were in total support of PLT and expressed interest in being involved in the adoption, implementation, and management of PLT in Missouri. None of the groups can sponsor the program individually, but would strongly support a consortium group approach.

The three most beneficial aspects of PLT are:

- PLT teaches critical thinking skills
- PLT easily supplements into existing curriculum and lesson plans
- PLT is fun.

Every state can boast of innovative programs covering wildlife conservation, forestry, soil, and water management or similar subjects. Wildlife and other natural resource classes are considered nontraditional classroom subjects. To cover these topics, most teachers must incorporate them into a curriculum already packed with required material. Even teachers motivated to provide resource education will have a hard time fitting it in. This is not the fault of the teacher or the school system.

Nationwide, various agencies and organizations have produced an avalanche of literature, films, and resource packets, most contents of which are excellent. The majority of this information focuses on resource data such as management activities or a perspective on some resource-related issue. Teachers often view this material as technical and biased. To them it looks little different from that offered by any other special interest group. Consequently, this add-on type of education material has had limited success in today's classrooms.

Any science program, at any grade level, incorporates plants, animals, and ecology. However, presentation of information is usually in a formal, didactic, and textbook-dominated format. Plants, animals, and their environments are presented as isolated entities (the subject of isolated chapters). Therefore, a determination of interconnection of these elements requires a separate educational program and/or textbook, often called environmental education.

Many Teachers see environmental education as not being an integral part of the standard curriculum. Therefore, many teachers find it difficult to incorporate this type of education into the standard curriculum requirements.

The National Science Teachers Association conducted a survey of its own and found among high schools in the United States that 30% offer no physics course, 20% no chemistry, 10% no biology, and 75% no earth or space science. It is reasonable to assume, then, that many children have no access to basic biology or earth science in their own schools. Schools are not teaching enough about how to connect science with policy. As Roy Vagelos, chairman of Merck and Company, writes, "It is disturbing that the men and women who will be the country's leaders in the 21st century are not being equipped to think intelligently about the environment, energy, space, defense, and biotechnology." (Kean 1991)

Many Teachers may feel inadequate attempting to incorporate environmental education into other nonrelated courses such as english and art.

According to Buethe (1975), "Teachers teach in terms of what they know and how they feel." This implies that if teachers have a good understanding of environmental education, teachers' attitudes toward teaching the subject should be more positive and more able to meet the environmental needs of the 1990s. (Kuntz)

Based on the findings of a research study done by Dorthea Kuntz, University of Idaho, and within the limitations of the study, it was concluded that participation in a PLT workshop results in a positive attitude change toward teaching environmental education. The method of presentation and the philosophy of PLT may be two of the determining factors that increase the strength of attitude change toward teaching. PLT's method and philosphy are both well grounded in educational theory and is an infusion of subject rather than a separate entity.

Integration into existing curriculum is the first basic rule for success in introducing nontraditional subjects into school classrooms. There are three others: (1) bias must be eliminated or balanced, (2) materials must be tested to insure useability, and (3) materials must be introduced through a workshop process. Bias, or the injecting of a dominant viewpoint, must be eliminated or at least balanced by providing the opportunity for students to examine all sides of an issue. Suitability for integration into existing curricula can only be confirmed by a good testing program. The fourth basic rule concerns introduction of program materials through teacher workshops. No educational materials should be distributed without a workshop covering use techniques and philosophies and their relationship to a school system's curriculum goals. Workshops not only prevent teachers from being overwhelmed by the material but acquaints them with local resource managers as well. This opens the door for a secondary benefit to the resource manager. Having received a balanced, useable package that enriches the classroom and excites students, the teacher now knows who to call for more information. This callback, or second wave, gives the manager an opportunity to get a specific message directly into a receptive classroom. (Hamilton)

In October 1970, Congress recognized a "deterioration of the Nation's ecological balance, severe enough to pose a threat to the well-being of the American people." The NEEA stated that this deterioration was "in part, due to a poor understanding of the Nation's environment and the need for ecological balance" (NEEA of 1970, page 1312).

School-age children between 5 and 18 years of age comprise up to 25% of our population. Thus, school systems can directly reach approximately 25% of the people in each state. An additional 25% or more of each state's population consists of parents of school-age children who can be indirectly influenced. Kindergarten

through high school offers a total of 13 years in which to educate potential future resource management professionals and must not be overlooked in the total education process. Providing teachers with high quality, integrative, nonbias, and tested and readily useable material is the key.

How do we take a nontraditional subject and infuse it into a curriculum in such a way as to make it easy for teachers to use and at the same time see results in our children?

> In 1970, the Western Regional Environmental Education Council (WREEC) was formed. This group consisted of 26 original members from 13 states with equal numbers of education and state resource agency professionals. The goals of the WREEC were identified as developing a program whereby young people must acquire awareness, knowledge, attitudes, and skills that would make decision making for natural resources possible. The American Forest Institute (now called the American Forest Council) awarded a grant to WREEC to develop the curriculum and thus PLT was initiated. The focal point of this program is the interdependence of society and nature with the forest as a primary basis from which instructional ideas and activities are developed. The results of a concerted effort on the part of education consultants, educators, resource personnel, and individuals from private conservation organizations (i.e., Friends of the Earth and the Sierra Club), forest protection associations, industry groups, and resource managers from federal and state public agencies (Charles 1981), were a set of interdisciplinary materials and teaching strategies in environmental education. This covered kindergarten through grade 12 and was designed for both classroom and outdoor use. Of paramount importance, and the major factor that distinguishes and elevates PLT as a curriculum above others currently available, is that it was the result of a cooperative effort among educators, industry personnel, and resource managers from a wide variety of professional disciplines.

"PLT was formed on the belief that teaching involves the structuring of experiences and activities which require students to explore situations, problems, and issues and to arrive at appropriate conclusions and positions. Throughout all the activities, students are encouraged to become involved in data gathering and analysis, problem solving, and decision making. Intellectual and valuing skills to be applied through the use of the lesson activities include acquisition and verification of knowledge, communication, effective group participation, critical thinking, creative problem solving, and development of skills which assist in the processes of recognizing, clarifying, managing, and solving problems." (Adams)

PLT is a highly successful, functioning model of the four-step approach to integrating nontraditional subjects into modern classrooms. PLT focuses on trees and the forest environment as a familiar base in which to explore the interrelationships between all living and nonliving things. PLT offers an excellent model for the process necessary

to get any nontraditional subject into the classrooms of Missouri. The success of PLT speaks strongly for the validity of the developmental method. The futuristic outlook that brought the WREEC together with the Western Association is in itself a model of cooperative development unrivaled among natural resource agencies nationwide.

How do we know PLT works?

> At the time PLT was first implemented as a test, a study commenced to determine effectiveness of the materials with students. This impact study was coordinated by the Bureau of School Service and Research (BSSR), University of Washington. The research compared the results of testing students in grades 4 through 12 who had experienced PLT activities with a control group at the same grade level. The most significant results, following PLT interaction, within the limitations of the study were shown by students in the intermediate grades (7 through 9), where they displayed significant increases in decision making, problem solving, and self concept. The most positive impact was in the elementary grades (1 through 6), where students exhibited the greatest gains in knowledge and achievment in content areas.
>
> In 1983, Marcept Consulting and Research Firm was contracted by Boise Cascade Corporation to design a questionnaire and cover letter to "assess the extent to which the PLT program, as it currently exists (in Idaho), was meeting management objectives." They found that most PLT users felt that, as a result of using the materials, students have a greater awareness of forest resource issues. (Evaluation of PLT)
>
> During 1988 and 1990, a survey was mailed to two groups of PLT users in Louisiana and one group in Texas. In these unpublished surveys, Culpepper and Walterscheidt found that educators used PLT one to four times per year. The survey also found that educators stated the reaction of their students to PLT activities as "highly enthusiastic." Respondents also reported students knowledge of environmental issues, attitude toward natural resources, and awareness of forest resources all increased as a direct result of using PLT acitivities. (Culpepper 1988, 1990)
>
> In 1983, a survey was sent to a random sample of 10,000 PLT educators throughout the United States. (Charles & Dawson 1983) The three significant questions raised by the sponsors of PLT, with clarification and results, are as follows:
>
> > Are teachers using PLT materials? - Are teachers using PLT materials in a manner consistent with their intended goals - to prepare students to make environmental decisions based on information, not emotion, and to help them become more aware of the importance of productive forests

in their lives? The majority of teachers (80%) used PLT materials in a manner consistent with its intended goals and original design - to promote a balanced view in order for students to make more-informed decisions. For example, one teacher reported that, before exposure to PLT, his students refused to take the part of forest products executives in a mock policy debate on forest management. These attitudes almost disappeared after the students had worked with PLT activities.

Is the project working? - After 1 to 3 years of PLT workshop participation, 70% of the respondents are still using project materials compared to 98% who reported planned continued use. More than 75% of those using PLT materials are classroom teachers, majority of whom are in elementary schools. Most teachers who reported using the PLT activities also stated that PLT provides, "students with opportunities for learning that are interesting, useful, instructionally sound, and often fun for the students as well." Additionally, about 75% of PLT teachers use project materials to supplement and enrich their classes in math, science, reading, social studies, and language arts.

Are students learning anything from PLT activities? - Most teachers (85%) reported that most or many of their students have a greater awareness of the forest resource and the environment as a result of PLT. Eighty-four percent reported that most or many have more responsible attitudes toward natural resources and the environment. Sixty-five percent reported that their students have increased awareness, knowledge, and skills concerning the many ways wood and paper products are used in their day-to-day lives. As a result of the evidence available, it appears that PLT is accomplishing the educational goals it was designed to achieve. (Charles & Dawson 1983)

In a research study conducted by the Bureau of School Service and Research (BSSR), it was decided by the PLT advisory board that the study would concentrate on an evaluation of the effects PLT materials have on students' knowledge, interest, and attitudes. Two test instruments were developed to evaluate the effect of PLT instructional materials on school children (one for grades 4 through 6 and the other for secondary grades). The survey was an opinion-based poll with additional factors included. Opinion item 31 dealt with the possible conflict between recreation and wood production. The difference between the groups is significant, with the attitude of the PLT group being slightly more favorable toward wood production than the control group. Opinion item 32 dealt with access of forest lands to hiking and camping. The difference is significant with the PLT group slightly more restrictive than the control group. Opinion item 33 dealt with peoples' ability to influence decisions about the forests. Both groups indicated considerable belief in the ability of

individuals to influence decisions. A significant result of some of the testing is that the PLT group shows an ability to generalize to nontaught materials (the students in the PLT group were able to achieve this generalization significantly more than the control group). In summary, the study indicates that the students feel that people can have some influence over decisions, that the PLT materials had the greatest impact on the intermediate students, and that the impact was strongest on the portions of the test which represented learning of the material covered in the lessons but was also evident in the area of generalized questions about the principles upon which the PLT lessons were built.

In a research study done by Dave Walters, University of Tennessee, for the purpose of assessing PLT by educators in Tennessee, 2,163 surveys were mailed out and produced 385 responses. One of the four most highly ranked reasons for using PLT was "to provide students with opportunities for learning that are interesting, useful, and instructionally sound." One of the survey questions asked for goals in the use of PLT (responses were ranked by number of like responses). A response with 85.6% support was "to help students understand the complexities in managing and protecting our natural resources," and a response with 84.6% support was "to prepare students to make reasonable decisions affecting forests and the environment." Respondents were asked to write what they thought were the greatest strengths and outstanding weaknesses of PLT. Of the 356 comments recorded, 74 mentioned that PLT's greatest strength was simplicity in using the activities, with statements that few extra materials are needed. Approximately 68% of the respondents replied that there were no outstanding weaknesses and, of the ones who identified weaknesses, 7% stated that not enough people know about PLT. (Walters 1991)

In the spring of 1990, the National PLT office mailed a survey to approximately 50,000 PLT participants in order to evaluate the need for revising the activity guides (return rate was 2%). Barriers to the use of PLT reported by respondents, in percent, are as follows:

50.0 - Few if any barriers

33.5 - Limited class time

4.0 - Not familiar enough with subject area

2.6 - Limited class time prevents use

1.4 - Already use similar guides

0.5 - Does not have sufficient "educational value"

8.1 - Other barriers

The most compelling reasons for using PLT reported by respondents, in percent, are:

38.3 - Students need more exposure to their environment

37.0 - Students need to be educated in environmental action techniques and problem solving

9.8 - PLT is the best supplementary environmental education curriculum available to me

7.9 - Students need to be more aware of forest management practices and conservation

5.2 - PLT compliments my curriculum very well

1.9 - Other

Now that it has been established that PLT is a program with a good track record, the next step is to discuss the process for the adoption of the program into Missouri.

On November 16, 1990, President Bush signed into law the NEEA, Public Law 101-619. This Act calls for the establishment of an Office of Environmental Education within the EPA to develop and support environmental education, seminars, training programs, teleconferences, and workshops for environmental education professionals through environmental education training programs.

The stated policy of the new law is to "establish and support a program of education on the environment for students and personnel working with students through activities in schools, institutions of higher education, and related educational activities and to encourage postsecondary students to pursue careers related to the environment." Today there are literally hundreds of organizations across the nation involved in environmental education (public and private schools at all levels; local, state, and federal government agencies; nonprofit organizations; private companies; professional associations; and foundations and clubs). Programs vary from state to state and community to community. But, in one way or another, many professional and nonprofessional educators are hard at work trying to "educate anyone about our environment who will listen about one or more aspects of the town, city, state, nation,

or world in which we live." Several federal agencies are involved in environmental education [i.e., U.S. Fish and Wildlife Service, National Park Service, Soil Conservation Service and Tennessee Valley Authority (TVA)]. The EPA has been promoting environmental education ever since it published its first public information brochure in 1971. The Act states that current federal efforts "to inform and educate the public concerning the natural and built environmental and environmental problems is not adequate." The Act further states that existing federal support "for development and training of professionals in environmental fields is not sufficient." The federal government, acting through the EPA, "should work with local education institutions, state education agencies, not-for-profit educational and environmental organizations, noncommercial educational broadcasting entities, and private sector interests to support development of curricula, special projects, and other activities to increase understanding of the natural and built environment and to improve awareness of environment problems." (NEEA 1990/EPA Journal 1991)

According to Congressional witnesses, environmental education is not a priority in most of the schools in the United States. There is a shortage of educational materials and trained educators to teach environmental concerns in kindergarten through grade 12. Few students receive even a rudimentary grasp of key concepts in environmental science, ethics, health, or related social sciences. For the federal government, the new law directs the EPA to work with the Department of Education, other federal agencies, and natural resource management agencies to ensure the effective coordination of programs related to environmental education, including those associated with national parks, forests, and wildlife refuges. A federal task force has been created and is composed of representatives from the Departments of Education, Interior, Agriculture; the National Oceanic and Atmospheric Administration; the Council on Environmental Quality; the TVA; the National Science Foundation; and chaired by the EPA. Also involved is an 11-member, private-sector advisory council on environmental education. To implement the new Act, Congress authorized annual appropriations, into the year 1996. The new law creates the National Environmental Education and Training Foundation as a nonprofit charitable corporation. (NEEA 1990)

So what does the NEEA say and how does it affect PLT in Missouri? The Act states the following:

- "Effective response to complex environmental problems requires understanding of the natural and built environment, awareness of environment problems and their origins (including those in urban areas), and the skill to solve these problems."

- "Current Federal efforts to inform and educate the public concerning the natural and built environment and environmental problems are not adequate."

- "Federal natural resource agencies such as the U.S. Forest Service have a wide range of environmental expertise and a long history of cooperation with educational institutions and technology transfer that can assist in furthering the purposes of the Act."

- "EPA must support development and the widest possible dissemination of model curricula, educational materials, and training programs for elementary and secondary students and other interested groups, including senior Americans."

The EPA, under Section 5 (of the Act), intends to award one major grant or cooperative agreement per year. An institution of higher education or other institution (or consortium of such institutions) which is a not-for-profit organization may submit proposals for said grant. The award will establish a nation-wide program to stimulate the improvements in environmental education and training. Collaboration between institutions; federal, state, and local agencies; and the private sector is encouraged for the establishment and attainment of the goals and objectives for the program. This may be accomplished through a consortium or by other mechanisms. The key word here is a consortium of groups. At present there are eight groups in Missouri expressing a willingness to become involved in PLT.

The functions and activities of the program, as specified in the Act and excerpted from the Federal Register page 30444, shall include at a minimum:

1. Classroom training in environmental education and studies including environmental sciences and theory, educational methods and practices, environmental career or occupational education, and topical environmental issues and problems;

2. Demonstration of the design and conduct of environmental field studies and assessments;

3. Development of environmental education programs and curriculum, including programs curriculum to meet the needs of diverse ethnic and cultural groups;

4. Sponsorship and management of international exchanges of teachers and other education professionals between the United States, Canada, and Mexico, involved in environmental programs and issues;

5. Maintenance or support of a library of environmental education materials, information, literature, and technologies with electronic as well as hard copy accessibility;

6. Evaluation and dissemination of environmental education materials, training methods, and related programs;

7. Sponsorship of conferences, seminars, and related forums for the advancement and development of environmental education and training curricula and materials, including international conferences, seminars, and forums;

8. Supporting effective partnerships and networks and the use of distant learning technologies; and

9. Such other activities as the Administrator determines to be consistent with the policies of this Act.

Special emphasis should be placed on developing environmental education programs, workshops, and training tools that are portable and can be broadly disseminated.

Any institution of higher education or other institution (or consortium of such institutions), which is a not-for-profit organization and is interested in receiving a grant under Section 5 of the Act, may submit to the Administrator an application in such form and containing such information as the Administrator may require (see appendix H for instructions).

The Administrator shall award grants to institutions and groups, under this section, that demonstrate qualities as follows:

- The capability to develop environmental education and training programs,

- The capability to deliver training to a range of participants and in a range of settings,

- The expertise of the staff in a range of appropriate disciplines,

- The relative economic effectiveness of the program in terms of the ratio of overhead costs to direct services, and

- The capability to make effective use of existing national environmental education resources and programs.

So what comes next?

Individuals eligible for participation in the program are: teachers, faculty, administrators, and related support staff associated with local education agencies, colleges, and universities; employees of State Departments of Education, Environmental Protection, and Natural Resources; and employees of not-for-profit organizations involved in environmental education activities and issues.

The Administrator may enter into a cooperative agreement or contract, or provide financial assistance in the form of a grant, to support various projects to design, demonstrate, or disseminate practices, methods, or techniques related to environmental education and training.

The Administrator will award grants based on the priority as listed in Section 9(d) of the Act.

The the normal implementation procedure, then, for PLT is that it is introduced into a new state through agreement among its national office, cosponsors, and usually the state education agency. Cosponsors are the American Forest Council (AFC) and the WREEC. The start up and implementation costs have typically been provided by AFC, frequently with the cooperation of state forestry groups, industry, environmental educational associations, local school districts, private conservation organizations, universities, and the state department of education.

Various courses of action can take place in Missouri such as one group or agency can sponsor the program for the entire state or several groups can form a consortium for the same purpose.

My recommendations for PLT in Missouri are as follows:

- A consortium sponsor the program with the lead agency being MDC. Set up a steering committee composed of representatives from interested groups and other federal or state agencies. Designate a board of directors to serve as a task force which should include at least two members of each group, agency, and university showing an interest in the program, and said board of directors be open for new members in perpetuity.

- Allow the group to apply for an NEEA grant to establish the program in Missouri.

As previously stated, in 1970, the federal government determined that there was a ""deterioration of the Nation's ecological balance, severe enough to pose a threat to the American people" which was in part due to "a poor understanding of the Nation's environment and the need for ecological balance."" On November 16, 1990, the NEEA

was passed for several reasons. Congress found that "effective response to complex environmental problems requires understanding of the natural and built environment, awareness of environmental problems and their origins (including those in urban areas), and the skills to solve these problems." Another finding of Congress is that "current federal efforts to inform and educate the public concerning the natural and built environment and environmental problems are not adequate." (NEEA 1990) There is not only a need for greater public awareness and education about environmental issues and the environment in general but a severe need for rational and balanced decisions on environmental issues facing the nation now and in the future.

A poll of 287 Missouri teachers revealed that 56% believe that their students are not learning how to think for themselves, they are not learning critical thinking skills (see Table 7). A poll of 1,756 Missouri school children (see Table 9) revealed that 40% of the children in kindergarten through grade 8 do not enjoy school, and 40% feel that learning in school is not fun at all. In the same poll, 45% of the grades 9 through 12 felt *school was not fun* and 47% of them felt *learning in school* was just not fun. (see Tables 8a and 8b)

TABLE 7. Missouri Teachers

	Yes (%)	No (%)	Neutral (%)	Total (%)
Are children learning critical thinking skills?	31	56	13	--
Do children enjoy school learning?	72	28	--	--
What percent of class time is spent outdoors?	--	--	--	9
What percent of class time is spent on hands-on activities?	--	--	--	31

TABLE 8A. Missouri Children and Young People

Is school fun?	In percent K-8	9-12
Yes	60	55
No	40	45

TABLE 8B. Missouri Children and Young People

Is learning fun?	In percent K-8	9-12
Yes	60	53
No	40	47

TABLE 9. Missouri Children and Young People

Grade level	No. of responses
Kindergarten through 8	1,296
Grades 9 through 12	460
TOTAL	1,756

Granted, over one-half of the students polled enjoy school and learning in school but the numbers should be much higher. The above poll indicates that Missouri students need some new teaching techniques in an effort to assist them in the learning process and give the system a boost in terms of stimulating the minds of our youth to think for themselves and enjoy the learning journey.

PLT is but one of many tools that can address the issues previously mentioned. PLT has been proven to be an effective and positive tool for use by anyone who deals with

young people. Young people like the "nontraditional" way of learning and so do educators. The natural resource management community also receives an added perk, because, with the use of PLT and other like programs, the future adults of America will be able to think for themselves and make wise, informed, well thought out, and balanced decisions about our natural resources.

When people learn about PLT, it is as if a fire had begun to burn within them because they understand the magnificent potential of such a program for everyone, but most of all for the children. Missouri will have PLT one day because the fire has begun to burn in the hearts of teachers and others in the geographical corners of the state and it is slowly moving through the state. It is simply a matter of time and it is my great desire that the time is now. Every year sees a new generation of children starting school without PLT, and each year that they go without PLT reinforces the type of environmental ignorance we see in America today....the kind that Congress found so wide spread that they passed a law to change it. When will we take a stand to insure that our environmental ethics do not degenerate into empty words from a lack of awareness, education, and true concern for America's enduring resources?

The ultimate benefits of instituting PLT include environmental awareness among young people which eventually passes into other segments of society. Therefore, the futuristic outlook centers on greater appreciation, sensitivity, knowledge of natural resources, and man's interdependence with the natural world we inhabit, as well as the physical world we utilize. Simply put, when people are environmentally knowledgeable and ecologically minded, there is less conflict between polarized viewpoints and more cooperation between different user groups in an effort to share the land we all have ownership to.

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LITERATURE CITED DENOTED BY ***.

"SHOW-ME" PROJECT LEARNING TREE

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ABSTRACT

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TITLE: *"SHOW-ME" PROJECT LEARNING TREE*

Project Learning Tree (PLT) is an award-winning environmental education program that has been adopted for use in 49 American states and 7 foreign countries. As of May 1992, Missouri is the only American state that does not have a PLT program statewide. In an effort to present the benefits of a PLT program and to persuade an agency or group of agencies to sponsor the program for the state of Missouri, a research study was conducted. The study was an opinion-based survey to determine the three most beneficial aspects (one from each category group) of PLT. There were three groups surveyed: (1) PLT coordinators across the United States and in 7 foreign countries, (2) teachers and educators in 21 American states, and (3) children and young people in 21 American states. The results of the study reveal that the natural resource professionals believe the most beneficial aspect of PLT is that it *teaches critical thinking skills* effectively; teachers and educators believe the most beneficial aspect is: it *suppliments easily* into existing curricula; children and young people like PLT because *it is fun*. This report cites and discusses the results of other surveys and reports conducted on PLT with regard to the effects PLT has on students, the learning process, attitudes and reasoning skills, as well as the attitudes of teachers on teaching environmental education in addition to required curricula. This report also discusses the National Environmental Education Act (NEEA) and the affects it could have on the adoption of PLT in Missouri.

I - INTRODUCTION

"The very idea that peoples' opinions count - in the markets, in the work place, in the voting booth - is America's great gift to the world." John Paluszer, as printed in April 1992 Readers Digest.

The purpose of this research is to gather and discuss the opinions of natural resource professionals, teachers, educators, children, and young people across the United States and in seven foreign countries, regarding PLT, an environmental education program that has been available for use since 1976. PLT is an award-winning program designed for teachers and other educators working with students in primary through the 12th grade.

- PLT uses the forest as a "window" into the natural world, helping young people gain an awareness and knowledge of the world around them as well as their place within it.
- PLT helps to prepare students to make wise decisions about conservation practices and resource use.
- PLT has been adopted by 49 American states and by the countries of Sweden, Finland, Mexico, Guam, American Samoa, the Commonwealth of Northern Marianna Islands, and 5 Canadian provinces.

Missouri is the only American state that does not have a PLT program. There are three possible reasons why Missouri has not adopted PLT:

- The Missouri Department of Conservation (MDC) has been at work since 1941 implementing and managing a state conservation education program that is regarded highly across the nation.
- With all of the effort MDC has put into the existing conservation education program over the years, many say "Why fix it if it ain't broke."
- Missouri is the "SHOW-ME" state and many people want to see the facts about PLT before supporting it completely.

This project will yield objective data and information from a wide cross-section of knowledgeable sources in an effort to identify the three most beneficial aspects of PLT. After determining the beneficial aspects of PLT, an attempt will be made to present the facts from other research conducted with regard to the effects of said program on children and the learning process. After all, the young people of Missouri are the ones who will ultimately suffer or benefit in the end.

At the present time, MDC is considering the adoption of PLT for the state. MDC is the most logical lead agency because of the already-existing programs, and MDC personnel are most familiar with the process of instituting and maintaining a statewide environmental education program.

II - CURRENT SITUATION

A. PLT offers an opportunity for educators and students to step into the forest, thereby developing awarenesses, knowledge, and skills related to understanding of renewable and nonrenewable resources on a finite planet.

Everyone on the earth today knows and can relate to trees in some form - so we begin with trees to provide a familiar base from which to explore the interrelationships between all living and nonliving things. Initial activities in the PLT activity guides encourage the students to use their primary senses (feeling the sun's warmth; hearing the sounds of nature and different cultures; and seeing the diversity of natural resources even within our immediate environments, such as in school classrooms and on campus grounds.

Further activities provide students the opportunity to experience the spectrum of ways in which their lives are nourished and changed each day, affected by the existence of renewable and nonrenewable natural resources - and human dependence on them.

People are products of their culture, as well as of nature. Thus, a number of the PLT activities place use of natural resources in a cultural context, providing opportunities to explore the historical and present day effects of these resources on people - and people's effects on them. Tools for understanding these interrelationships are stressed, including techniques for analysis of human communication.

People have characteristically differed about the appropriate uses of natural resources. Rather than ignore these differences and the difficult issues frequently involved, students can explore opportunities to hone their basic skills

thereby developing their capacities for creative and critical thinking, and in the process, address issues fundamental to the continued use of natural resources.

Addressing of substantive issues requires a breadth of information and experience, as well as skills of intuition and logic. PLT has been designed to provide such experience and skills. The PLT materials are presented in the form of learning activities for use by educators with students in the elementary and secondary grades. The activities may be used as the basis for a course of study, but are more likely to be used to supplement existing curricula. The activities are based on a conceptual framework for environmental education designed to engage students in interdisciplinary exploration of concepts underlying all of the major acedemic disciplines - from the social sciences, humanities, communication arts, natural sciences, mathematics, and physical sciences. At the same time, making use of the basic skills of information acquisitions, analysis, evaluation, and inventiveness necessary to the development of creative and thoughtful minds - minds ready to meet the challenges of today and for the future.

The PLT activities are based on a conceptual framework that involves seven key principles, as follows:

1. Instill a deep appreciation for the diverse forest environment.

2. Develop an awareness of the diversity and importance of forest resources and their concomitant values as they relate to the environmental, economic, and sociological health of a region, the country, and the planet.

3. Develop an understanding of the impact of, and the role played by, the forest environment in shaping the political, economic, and sociological events and behaviors of the past, present, and future.

4. Acquaint students with the perspectives from and by which various interest groups judge contemporary forest/environmental issues, the mechanisms by which these issues are resolved, and ways in which their outcome may be influenced.

5. Equip students with sufficient knowledge and skills that they may intelligently predict and evaluate the impact of a specific management policy on the forest environment and its interdependent communities.

6. Provide the student with a basic understanding of how the life-support system of planet earth functions and have the necessary skills and knowledge to evaulate the short-term, and more importantly, the long-range effects that manipulations of segments of this system will have on its integrity.

7. Provide students with the skills and knowledge to evaluate and modify their own lifestyles in light of an acute awareness of the finiteness of planet earth.

B. MDC's Education Section currently has a very extensive environmental education program established in Missouri schools. Since 1941, MDC has consistently supported this formal conservation education program in the state system of public, private, parochial, and home schools, as required by law for youth groups. The mission statement for the Education Section of MDC is "To provide user-friendly, formal education programs for education professionals, youth leaders, students, parents, and citizens about forest, fish, and wildlife resources and the ecological base which supports them." The Education Section's goal is "To continue designing and providing programs for citizens to develop a conservation ethic which influences: (1) social, political, and economic decisions affecting natural resources and ecological systems; (2) respect for the ethical use of resources; (3) harvesting as a management tool as it relates to forest, fish, and wildlife resources; and (4) teaching the interrelationships of all natural resources." (MDC 1991)

The major responsibilities and activities of the Conservation Education Division include:

- Assisting public, private, and parochial school administrators, classroom teachers, college and university professors, leaders of youth organizations, parents, and citizens in establishing educational programs which offer Missourians opportunities to develop conservation practices and ethics.

- Producing and disseminating conservation education publications, audio-visual materials, and other conservation curriculum teaching aids.

- Utilizing available media to enhance public awareness, knowledge, and commitment to the conservation of Missouri's forest, fish, and wildlife resources.

- Working cooperatively with the Missouri Department of Elementary and Secondary Education; the Coordinating Board for Higher Education; and

individual schools, colleges, and universities throughout the state in the production and use of multidisciplinary conservation education curricula.

- Teaching in-service credit courses, workshops, and seminars to enhance the ability of educators, youth leaders, and parents to teach young people about the wise use of Missouri's forests, fish, wildlife, and related natural resources.

MDC offers different types of services in the area of conservation education, each of which are briefly summarized as follows:

- *Teacher/Youth Leader Training*: Conservation education consultants offer courses and workshops to help educators improve their ability to teach young people about wise resource use. Participants study conservation principles and learn techniques of teaching conservation via outdoor field investigations and other methods. Opportunities abound for teachers and youth leaders to learn about conservation, ranging from 1-day short courses to full-semester, college-credit offerings. Some courses are conducted in local school districts, while others may be held at a department facility or a nearby college or university.

- *Conservation Seeds Program*: This program promotes conservation awareness and is designed for 3- to 5-year old children. Its purpose is to help teachers of early childhood students heighten their students awareness of nature and conservation. Teaching from the whole environment is encouraged wherever possible, to give the children every opportunity to grasp a new concept. The Conservation Seeds Program includes a 200-page activity book, seasonal posters depicting examples of land and resource uses, and animal and habitat cards.

- "*Learning With Otis*" *Program*: Teachers and students in grades 1 through 6 and special education will meet a conservation friend as they learn with Otis. Otis, a cartoon deer mouse, is the mascot for the Department's, "Learning with Otis" Program. The materials provide teachers with conservation education activities in the areas of ecology, geology, soil, land use, conservation ethics, wildlife, plants, and water and aquatic life.

- *Missouri Conservation Frontiers Program*: This program is activity-oriented, emphasizing the conservation of natural resources, and most projects deal with renewable resources (i.e., wildlife, fish, and forests). The program is designed primarily for the young people of Missouri, but

citizens of all ages are urged to learn and become involved in this challenging conservation effort. Also, the program provides a system of activities and awards which can be adapted and utilized by families and youth groups in the state.

- *Conservation Education Series*: Junior and senior high-school teachers may order instructional units on conservation topics for specific curricular areas. These units provide background information, lesson plans, quizzes, and line art for overhead transparencies. Each unit emphasizes Missouri's resources.

- *The Conservation Connection*: Designed for junior and senior high-school teachers, The Conservation Connection is a quarterly newsletter designed to help teachers keep up-to-date on conservation materials and programs offered by MDC.

- *Aquatic Education Program*: This is a program for certain instructors and young people, offering in-class instruction on basic conservation concepts, aquatic ecology, and water safety. In addition, fishing techniques are taught and fishing opportunities are provided. Urban fishing programs are offered each summer in the cities of Kansas City, St. Louis, and Springfield. Urban youth receive instructions in aquatic ecology, fishing techniques, and outdoor ethics then go fishing in a stocked lake. This program is also offered for the physically and mentally handicapped of all ages.

- *Conservation Honors Program*: This program is designed for high-school juniors who are interested in any aspect of natural resources conservation. The curriculum was developed by the University of Missouri-Columbia's School of Forestry/ Fisheries and Wildlife and MDC. Students selected for the program participate in a 1-week educational experience presented by personnel from the University of Missouri and MDC. At completion of the program, they earn 2-hours advanced college credit.

- *Conservation in Agricultural Education Program*: Under this program, the Department's Education Section prepares conservation material packets and videos for use at the high-school teaching level. These materials are made available to agriculture teachers through their established curriculum system.

- *Outdoor Classrooms*: These on-campus sites enhance the study of ecological principles and conservation practices. Conservation consultants offer suggestions for developing and using outdoor classrooms.

- *Special Program Materials*: Teaching aids, from posters to information bulletins, are available to teachers and youth leaders. (MDC 1991)

Currently, the Missouri Department of Education works closely with MDC on the aforementioned programs. They are all in compliance with state laws, mandates, and educational requirements governing the state of Missouri.

C. The Kansas City School District, Kansas City, Missouri, is currently operating under the Magnet Theme, in which specific subject themes are identified for specific schools. There are 20 different magnet themes (i.e., Arts and Sciences, Communications and Writing, Environmental Science, Military Science, International Studies, etc.) in the school district, with 64 participating schools. The objective of the Magnet Theme theory is to incorporate the theme into every aspect of a school curriculum; thus, an integrated course of study is imperative. The environmental magnet schools in Kansas City have been using "Project WILD" for several years and just began with PLT in 1991. The overwhelming response from teachers and educators there is that PLT makes the task of integrating environmental education into the standard curriculum easy. It has already been done by the American Forest Council and the Western Regional Environmental Education Council (WREEC) within the PLT Guides.

D. Eight specific organizations have expressed an interest in participating in the introduction, implementation, and management of PLT in Missouri, none of which can commit to sponsoring the program individually, but would seriously consider working in cooperation with one or more groups.

III - LITERATURE REVIEW

A literature review was conducted in an effort to identify any earlier research that may have been done on PLT. The Clemson University Library conducted the following database searches: AGRICOLA, EIRC, and DORIS. The University of West Virginia's Morgantown Library conducted an EIRC search and an FS INFO search. The Society of American Foresters was also contacted and a search of their records ensued. All of the above sources proved to be unsuccessful. Finally the American Forest Council in Washington D.C. was contacted. This is the nonprofit organization that sponsers PLT nationwide and their response included several unpublished reports.

Although PLT is supported in 49 states and several other countries, very little has been published about the program. However, it is possible to find references and support for the program in forestry journals and newsletters.

Several unpublished reports were obtained from individual researchers and/or the university where the research was conducted, as well as through the American Forest Council Office, Washington, D.C.

Publications were provided by the U.S. Environmental Protection Agency (EPA), including the EPA Journal, as well as documentation on the NEEA and current policy on same.

Sources of publications were:

- Texas A&M University
- University of Tennessee
- American Forest Council
- U.S. Environmental Protection Agency
- MDC, Forestry Division
- Clemson Short Course Handouts
- Publications obtained through Clemson Short Course contacts
- U.S. Department of Agriculture Forest Service

IV - RESEARCH METHODS

In October 1991, letters were mailed to 14 districts of MDC's Education Section, as well as three letters to the main headquarters in Jefferson City, Missouri (see appendix B). Each letter stated that a research project on natural resource education was underway. A request was made for information as follows:

- Curriculum used by the teacher as a baseline as developed by MDC.

- Manner in which the schools utilize the program, to the best of MDC's knowledge (i.e., mandatory or teachers preference).

- Examples (3 to 5) of the teaching materials provided by MDC (i.e., coloring books, fire safety comic books, posters, etc.)

- Overall objective of the specific program with regard to the effects it should produce in school-age children, from MDC's point of view (i.e., kids should not play with matches, etc.)

I received one response from the headquarters in Jefferson City in the form of a pamphlet describing the educational programs MDC has established in the state, as well as a 5-year plan for MDC education.

In October 1991, phone contact was made with Kathy McGlauflin, National PLT Coordinator/contact person. She provided the names and addresses of the contact person(s) in each state and country. Letters were mailed to 103 contacts within the United States and the countries of Finland, Sweden, Guam, Mexico, Canada, the Commonwealth of Northern Mariana Islands, and American Samoa. Each letter stated that a research project was underway to determine the three most beneficial aspects of PLT from the standpoint of natural resource professionals, teachers/educators, and children and young people (see appendix A). Requested information follows:

- Their personal opinion to the question: "What do you feel is the single most-beneficial aspect of PLT?"
- Names, addresses, and telephone numbers of 5 to 10 teachers/educators, naturalists, etc., that they felt certain were using PLT activities on a regular basis in their state or country.
- A copy of their state brochure and other publications regarding PLT and a copy of any PLT videos that they might have.

I received 72 responses which included names of teachers/educators/naturalists, and their addresses. I also received five videos for use in the production of my own video for this project and ultimately for future use by the Forest Service.

In November 1991, letters were mailed to 255 teachers/educators/naturalists (see appendix C). Again the letters stated that a research project was underway to determine the three most beneficial aspects of PLT and the following information was requested:

- Their personal opinion to the question: What do you feel is the single most beneficial aspect of PLT?
- A request that they poll their classes and complete and return the survey forms (see appendix D) for as many students as possible.

- Requested volunteers from surrounding states (Illinois, Kansas, Oklahoma, and Arkansas) participate in the production of an 8-minute video to display the results of this research.

I received 143 responses from teachers and educators in 21 American states and 394 responses from children and young people in the same states.

In January 1992, phone contact was made with Bruce Palmer, an MDC representative who is listed as a state contact for PLT in Missouri. He provided a set of curriculum books and other educational materials, which were not forthcomming from any of the other educational districts or the headquarters, as had been requested.

In January 1992, letters were mailed to 287 teachers/educators in the state of Missouri (see appendix E). The letters stated that a research project was underway and requested information as follows:

- Teachers complete and return the survey form (see appendix F) in the self-addressed, postage-paid envelope.

- Teachers duplicate the survey form (see appendix G) for their classes and encourage completion of it by as many students as possible or desirable.

I received 209 teacher responses and 1,756 student survey forms.

Phone contact was established with nine organizations to determine the official position of each on the adoption of PLT in Missouri, and their willingness/ unwillingness to assist other organizations in the implementation and management of PLT in Missouri, should it be adopted. The groups contacted are as follows:

- Society of American Foresters
- Missouri Forest Products Association
- University of Missouri-Columbia, Natural Resources Department
- Lincoln University
- Missouri Department of Education
- United States Soil Conservation Service (SCS)

- Association of Soil and Water Conservation Districts
- Powell Gardens, Springfield, Missouri
- Missouri Department of Conservation

Unsuccessful phone attempts were made to contact the State Forester and the administrator of the St. Louis Botanical Gardens.

Phone contact was made with the U.S. EPA, to obtain information about the NEEA, passed into law October 1990. As a result of NEEA, funds have now become available for environmental education (see appendix H).

V - RESULTS AND CONCLUSIONS

The data received were compiled according to personal opinions and classified into 10 major groups for the natural resource professionals, 10 major groups for teachers/ educators, and 7 major groups for children and young people.

The groups were then organized by the number of responses by category group (i.e., category group 1 - natural resource professionals, category group 2 - teachers/ educators, category group 3 - children and young people). All responses were in the words of the respondent and were thus subject to some minor interpretation. The breakdown of major groups and number of responses for each may be found in Tables 1a, 1b, 2a, 2b, 3a, and 3b.

TABLE 1a. Natural Resource Professionals' Responses

Category	No. of Responses	Percent of Total
Teaches critical thinking	14	20
Easily suppliments into existing curriculum	11	16
Uses hands-on approach	10	14
Flexible	7	9
Interdisciplinary	6	8
Source of information	6	8
Can reach more people than resource professionals alone	6	7
Brings educators & resource personnel together	5	7
Can be used easily by anyone anywhere	4	7
Facilitates a learning environment	3	4
TOTALS:	72	100

TABLE 1b. A Summary of Natural Resource Professionals' Responses

	Percentage
Teaches critical thinking	20
Suppliments easily	16
Uses Hands-on	14
Other	50
TOTAL:	100

Of the 103 natural resource professionals surveyed, the 72 responses were submitted by representatives from the United States and Canada. The number one choice from this category group is: *PLT teaches critical thinking skills* (20% of the responses). The second and third choices are: PLT supplements easily (16%), and PLT uses hands-on activities/learning techniques (14%) (see Table 1b). The remaining 50% of the responses are broken down into categories comprising 10% or less (see Table 1b).

TABLE 2a. Teachers' and Educators' Responses

	No. of Responses	Percent of Total
Easily integrates into curriculum	58	41
Teaches critical thinking	16	11
Children learn	15	11
Uses hands-on approach	14	10
Fun	11	7
Children are actively involved	10	7
Uses outdoors	7	5
Good variety	7	5
Credible, tested, supported	3	2
Unbiased	2	1
TOTALS:	143	100

TABLE 2b. A Summary of Teachers' and Educators' Responses

	Percentage
Easily intergrates	41
Critical thinking	11
Children learn	11
Hands-on	10
Other	27
TOTAL:	100

There were 255 teachers/educators surveyed with 143 responses from 24 different states in the United States. The number one choice from this category group is: *PLT easily suppliments into existing curriculum and lesson plans* (41% of the responses). The second, third, and fourth choices are PLT teaches critical thinking skills (11%), children learn with PLT (11%), and PLT uses hands-on activities/learning techniques (10%) (see Table 2b).

TABLE 3a. Children's and Young Peoples' Responses

	No. of Responses	Percent of Total
Fun	149	38
I learn more/easier/interesting	122	31
Going outside	64	16
Doing/Experimenting/Exploring	23	6
I learn to think through things/ working in groups/see what is around me	17	4
I can express myself	10	3
I learn that I can do something for the earth	9	2
TOTALS:	394	100

TABLE 3b. A Summary of Children's and Young People's Responses

	Percentage
Fun	11
I learn more/easy	31
Going outside	16
Other	15
TOTAL:	100

There were 425 students/young people surveyed by their teachers/educators/youth leaders in 24 different states in the United States, with 394 responses. The number one choice from this category group is: *PLT is fun* (38% of the responses). The second and third choices are PLT helps me learn more and easier (31%), and we get to go outside with PLT activities (16%) (see Table 3b).

Of the nine groups/agencies contacted by phone, eight were in total support of PLT and expressed interest in being involved in the adoption, implementation, and management of PLT in Missouri. None of the groups can sponsor the program individually, but would strongly support a consortium group approach.

The three most beneficial aspects of PLT are:

- PLT teaches critical thinking skills
- PLT easily supplements into existing curriculum and lesson plans
- PLT is fun.

Every state can boast of innovative programs covering wildlife conservation, forestry, soil, and water management or similar subjects. Wildlife and other natural resource classes are considered nontraditional classroom subjects. To cover these topics, most teachers must incorporate them into a curriculum already packed with required

material. Even teachers motivated to provide resource education will have a hard time fitting it in. This is not the fault of the teacher or the school system.

Nationwide, various agencies and organizations have produced an avalanche of literature, films, and resource packets, most contents of which are excellent. The majority of this information focuses on resource data such as management activities or a perspective on some resource-related issue. Teachers often view this material as technical and biased. To them it looks little different from that offered by any other special interest group. Consequently, this add-on type of education material has had limited success in today's classrooms.

Any science program, at any grade level, incorporates plants, animals, and ecology. However, presentation of information is usually in a formal, didactic, and textbook-dominated format. Plants, animals, and their environments are presented as isolated entities (the subject of isolated chapters). Therefore, a determination of interconnection of these elements requires a separate educational program and/or textbook, often called environmental education.

Many Teachers see environmental education as not being an integral part of the standard curriculum. Therefore, many teachers find it difficult to incorporate this type of education into the standard curriculum requirements.

The National Science Teachers Association conducted a survey of its own and found among high schools in the United States that 30% offer no physics course, 20% no chemistry, 10% no biology, and 75% no earth or space science. It is reasonable to assume, then, that many children have no access to basic biology or earth science in their own schools. Schools are not teaching enough about how to connect science with policy. As Roy Vagelos, chairman of Merck and Company, writes, "It is disturbing that the men and women who will be the country's leaders in the 21st century are not being equipped to think intelligently about the environment, energy, space, defense, and biotechnology." (Kean 1991)

Many teachers may feel inadequate attempting to incorporate environmental education into other nonrelated courses such as english and art.

According to Buethe (1975), "Teachers teach in terms of what they know and how they feel." This implies that if teachers have a good understanding of environmental education, teachers' attitudes toward teaching the subject should be more positive and more able to meet the environmental needs of the 1990s (Kuntz).

Based on the findings of a research study done by Dorthea Kuntz, University of Idaho, and within the limitations of the study, it was concluded that participation in a PLT workshop results in a positive attitude change toward teaching environmental education. The method of presentation and the philosophy of PLT may be two of the

determining factors that increase the strength of attitude change toward teaching. PLT's method and philosphy are both well grounded in educational theory and is an infusion of subject rather than a separate entity.

Integration into existing curriculum is the first basic rule for success in introducing nontraditional subjects into school classrooms. There are three others: (1) bias must be eliminated or balanced, (2) materials must be tested to insure useability, and (3) materials must be introduced through a workshop process. Bias, or the injecting of a dominant viewpoint, must be eliminated or at least balanced by providing the opportunity for students to examine all sides of an issue. Suitability for integration into existing curricula can only be confirmed by a good testing program. The fourth basic rule concerns introduction of program materials through teacher workshops. No educational materials should be distributed without a workshop covering use techniques and philosophies and their relationship to a school system's curriculum goals. Workshops not only prevent teachers from being overwhelmed by the material but acquaints them with local resource managers as well. This opens the door for a secondary benefit to the resource manager. Having received a balanced, useable package that enriches the classroom and excites students, the teacher now knows who to call for more information. This callback, or second wave, gives the manager an opportunity to get a specific message directly into a receptive classroom (Hamilton).

In October 1970, Congress recognized a "deterioration of the Nation's ecological balance, severe enough to pose a threat to the well-being of the American people." The NEEA stated that this deterioration was "in part, due to a poor understanding of the Nation's environment and the need for ecological balance" (NEEA of 1970, page 1312).

School-age children between 5 and 18 years of age comprise up to 25% of our population. Thus, school systems can directly reach approximately 25% of the people in each state. An additional 25% or more of each state's population consists of parents of school-age children who can be indirectly influenced. Kindergarten through high school offers a total of 13 years in which to educate potential future resource management professionals and must not be overlooked in the total education process. Providing teachers with high quality, integrative, nonbiased, and tested and readily useable material is the key.

How do we take a nontraditional subject and infuse it into a curriculum in such a way as to make it easy for teachers to use and at the same time see results in our children?

In 1970, the Western Regional Environmental Education Council (WREEC) was formed. This group consisted of 26 original members from 13 states with equal numbers of education and state resource agency professionals. The

goals of the WREEC were identified as developing a program whereby young people must acquire awareness, knowledge, attitudes, and skills that would make decision making for natural resources possible. The American Forest Institute (now called the American Forest Council) awarded a grant to WREEC to develop the curriculum and thus PLT was initiated. The focal point of this program is the interdependence of society and nature with the forest as a primary basis from which instructional ideas and activities are developed. The results of a concerted effort on the part of education consultants, educators, resource personnel, and individuals from private conservation organizations (i.e., Friends of the Earth and the Sierra Club), forest protection associations, industry groups, and resource managers from federal and state public agencies (Charles 1981), were a set of interdisciplinary materials and teaching strategies in environmental education. This covered kindergarten through grade 12 and was designed for both classroom and outdoor use. Of paramount importance, and the major factor that distinguishes and elevates PLT as a curriculum above others currently available, is that it was the result of a cooperative effort among educators, industry personnel, and resource managers from a wide variety of professional disciplines.

"PLT was formed on the belief that teaching involves the structuring of experiences and activities which require students to explore situations, problems, and issues and to arrive at appropriate conclusions and positions. Throughout all the activities, students are encouraged to become involved in data gathering and analysis, problem solving, and decision making. Intellectual and valuing skills to be applied through the use of the lesson activities include acquisition and verification of knowledge, communication, effective group participation, critical thinking, creative problem solving, and development of skills which assist in the processes of recognizing, clarifying, managing, and solving problems (Adams)."

PLT is a highly successful, functioning model of the four-step approach to integrating nontraditional subjects into modern classrooms. PLT focuses on trees and the forest environment as a familiar base in which to explore the interrelationships between all living and nonliving things. PLT offers an excellent model for the process necessary to get any nontraditional subject into the classrooms of Missouri. The success of PLT speaks strongly for the validity of the developmental method. The futuristic outlook that brought the WREEC together with the Western Association is in itself a model of cooperative development unrivaled among natural resource agencies nationwide.

How do we know PLT works?

At the time PLT was first implemented as a test, a study commenced to determine effectiveness of the materials with students. This impact study was

coordinated by the Bureau of School Service and Research (BSSR), University of Washington. The research compared the results of testing students in grades 4 through 12 who had experienced PLT activities with a control group at the same grade level. The most significant results, following PLT interaction, within the limitations of the study were shown by students in the intermediate grades (7 through 9), where they displayed significant increases in decision making, problem solving, and self concept. The most positive impact was in the elementary grades (1 through 6), where students exhibited the greatest gains in knowledge and achievment in content areas.

In 1983, Marcept Consulting and Research Firm was contracted by Boise Cascade Corporation to design a questionnaire and cover letter to "assess the extent to which the PLT program, as it currently exists (in Idaho), was meeting management objectives." They found that most PLT users felt that, as a result of using the materials, students have a greater awareness of forest resource issues (Evaluation of PLT).

During 1988 and 1990, a survey was mailed to two groups of PLT users in Louisiana and one group in Texas. In these unpublished surveys, Culpepper and Walterscheidt found that educators used PLT one to four times per year. The survey also found that educators stated the reaction of their students to PLT activities as "highly enthusiastic." Respondents also reported students knowledge of environmental issues, attitude toward natural resources, and awareness of forest resources all increased as a direct result of using PLT activities (Culpepper 1988, 1990).

In 1983, a survey was sent to a random sample of 10,000 PLT educators throughout the United States (Charles & Dawson 1983). The three significant questions raised by the sponsors of PLT, with clarification and results, are as follows:

> Are teachers using PLT materials? - Are teachers using PLT materials in a manner consistent with their intended goals - to prepare students to make environmental decisions based on information, not emotion, and to help them become more aware of the importance of productive forests in their lives? The majority of teachers (80%) used PLT materials in a manner consistent with its intended goals and original design - to promote a balanced view in order for students to make more-informed decisions. For example, one teacher reported that, before exposure to PLT, his students refused to take the part of forest products executives in a mock policy debate on forest management. These attitudes almost disappeared after the students had worked with PLT activities.

Is the project working? - After 1 to 3 years of PLT workshop participation, 70% of the respondents are still using project materials compared to 98% who reported planned continued use. More than 75% of those using PLT materials are classroom teachers, majority of whom are in elementary schools. Most teachers who reported using the PLT activities also stated that PLT provides, "students with opportunities for learning that are interesting, useful, instructionally sound, and often fun for the students as well." Additionally, about 75% of PLT teachers use project materials to supplement and enrich their classes in math, science, reading, social studies, and language arts.

Are students learning anything from PLT activities? - Most teachers (85%) reported that most or many of their students have a greater awareness of the forest resource and the environment as a result of PLT. Eighty-four percent reported that most or many have more responsible attitudes toward natural resources and the environment. Sixty-five percent reported that their students have increased awareness, knowledge, and skills concerning the many ways wood and paper products are used in their day-to-day lives. As a result of the evidence available, it appears that PLT is accomplishing the educational goals it was designed to achieve. (Charles & Dawson 1983)

In a research study conducted by the Bureau of School Service and Research (BSSR), it was decided by the PLT advisory board that the study would concentrate on an evaluation of the effects PLT materials have on students' knowledge, interest, and attitudes. Two test instruments were developed to evaluate the effect of PLT instructional materials on school children (one for grades 4 through 6 and the other for secondary grades). The survey was an opinion-based poll comparing control groups of students with no use of PLT activity and PLT groups using PLT activities. Opinion item 31 dealt with the possible conflict between recreation and wood production. The difference between the groups is significant, with the attitude of the PLT group being slightly more favorable toward wood production than the control group. Opinion item 32 dealt with access of forest lands to hiking and camping. The difference is significant with the PLT group slightly more restrictive than the control group. Opinion item 33 dealt with peoples' ability to influence decisions about the forests. Both groups indicated considerable belief in the ability of individuals to influence decisions. A significant result of some of the testing is that the PLT group shows an ability to generalize to nontaught materials (the students in the PLT group were able to achieve this generalization significantly more than the control group). In summary, the study indicates that the students feel that people can have some influence over decisions, that the PLT materials had the greatest impact on the intermediate students, and that the

impact was strongest on the portions of the test which represented learning of the material covered in the lessons but was also evident in the area of generalized questions about the principles upon which the PLT lessons were built.

In a research study done by Dave Walters, University of Tennessee, for the purpose of assessing PLT by educators in Tennessee, 2,163 surveys were mailed out and produced 385 responses. One of the four most highly ranked reasons for using PLT was "to provide students with opportunities for learning that are interesting, useful, and instructionally sound." One of the survey questions asked for goals in the use of PLT (responses were ranked by number of like responses). A response with 85.6% support was "to help students understand the complexities in managing and protecting our natural resources," and a response with 84.6% support was "to prepare students to make reasonable decisions affecting forests and the environment." Respondents were asked to write what they thought were the greatest strengths and outstanding weaknesses of PLT. Of the 356 comments recorded, 74 mentioned that PLT's greatest strength was simplicity in using the activities, with statements that few extra materials are needed. Approximately 68% of the respondents replied that there were no outstanding weaknesses and, of the ones who identified weaknesses, 7% stated that not enough people know about PLT (Walters 1991).

In the spring of 1990, the National PLT office mailed a survey to approximately 50,000 PLT participants in order to evaluate the need for revising the activity guides (return rate was 2%). Barriers to the use of PLT reported by respondents, in percent, are as follows:

50.0 - Few if any barriers

33.5 - Limited class time

4.0 - Not familiar enough with subject area

2.6 - Limited class time prevents use

1.4 - Already use similar guides

0.5 - Does not have sufficient "educational value"

8.1 - Other barriers

The most compelling reasons for using PLT reported by respondents, in percent, are:

38.3 - Students need more exposure to their environment

37.0 - Students need to be educated in environmental action techniques and problem solving

9.8 - PLT is the best supplementary environmental education curriculum available to me

7.9 - Students need to be more aware of forest management practices and conservation

5.2 - PLT compliments my curriculum very well

1.9 - Other

Now that it has been established that PLT is a program with a good track record, the next step is to discuss the process for the adoption of the program into Missouri.

On November 16, 1990, President Bush signed into law the NEEA, Public Law 101-619. This Act calls for the establishment of an Office of Environmental Education within the EPA to develop and support environmental education, seminars, training programs, teleconferences, and workshops for environmental education professionals through environmental education training programs.

The stated policy of the new law is to "establish and support a program of education on the environment for students and personnel working with students through activities in schools, institutions of higher education, and related educational activities and to encourage postsecondary students to pursue careers related to the environment." Today there are literally hundreds of organizations across the nation involved in environmental education (public and private schools at all levels; local, state, and federal government agencies; nonprofit organizations; private companies; professional associations; and foundations and clubs). Programs vary from state to state

and community to community. But, in one way or another, many professional and nonprofessional educators are hard at work trying to "educate anyone about our environment who will listen about one or more aspects of the town, city, state, nation, or world in which we live." Several federal agencies are involved in environmental education [i.e., U.S. Fish and Wildlife Service, National Park Service, Soil Conservation Service and Tennessee Valley Authority (TVA)]. The EPA has been promoting environmental education ever since it published its first public information brochure in 1971. The Act states that current federal efforts "to inform and educate the public concerning the natural and built environmental and environmental problems is not adequate." The Act further states that existing federal support "for development and training of professionals in environmental fields is not sufficient." The federal government, acting through the EPA, "should work with local education institutions, state education agencies, not-for-profit educational and environmental organizations, noncommercial educational broadcasting entities, and private sector interests to support development of curricula, special projects, and other activities to increase understanding of the natural and built environment and to improve awareness of environment problems." (NEEA 1990/EPA Journal 1991)

According to Congressional witnesses, environmental education is not a priority in most of the schools in the United States. There is a shortage of educational materials and trained educators to teach environmental concerns in kindergarten through grade 12. Few students receive even a rudimentary grasp of key concepts in environmental science, ethics, health, or related social sciences. For the federal government, the new law directs the EPA to work with the Department of Education, other federal agencies, and natural resource management agencies to ensure the effective coordination of programs related to environmental education, including those associated with national parks, forests, and wildlife refuges. A federal task force has been created and is composed of representatives from the Departments of Education, Interior, Agriculture; the National Oceanic and Atmospheric Administration; the Council on Environmental Quality; the TVA; the National Science Foundation; and chaired by the EPA. Also involved is an 11-member, private-sector advisory council on environmental education. To implement the new Act, Congress authorized annual appropriations, into the year 1996. The new law creates the National Environmental Education and Training Foundation as a nonprofit charitable corporation. (NEEA 1990)

So what does the NEEA say and how does it affect PLT in Missouri? The Act states the following:

- "Effective response to complex environmental problems requires understanding of the natural and built environment, awareness of environment problems and their origins (including those in urban areas), and the skill to solve these problems."

- "Current Federal efforts to inform and educate the public concerning the natural and built environment and environmental problems are not adequate."

- "Federal natural resource agencies such as the U.S. Forest Service have a wide range of environmental expertise and a long history of cooperation with educational institutions and technology transfer that can assist in furthering the purposes of the Act."

- "EPA must support development and the widest possible dissemination of model curricula, educational materials, and training programs for elementary and secondary students and other interested groups, including senior Americans."

The EPA, under Section 5 (of the Act), intends to award one major grant or cooperative agreement per year. An institution of higher education or other institution (or consortium of such institutions) which is a not-for-profit organization may submit proposals for said grant. The award will establish a nation-wide program to stimulate the improvements in environmental education and training. Collaboration between institutions; federal, state, and local agencies; and the private sector is encouraged for the establishment and attainment of the goals and objectives for the program. This may be accomplished through a consortium or by other mechanisms. The key word here is a consortium of groups. At present there are eight groups in Missouri expressing a willingness to become involved in PLT.

The functions and activities of the program, as specified in the Act and excerpted from the Federal Register page 30444, shall include at a minimum:

1. Classroom training in environmental education and studies including environmental sciences and theory, educational methods and practices, environmental career or occupational education, and topical environmental issues and problems;

2. Demonstration of the design and conduct of environmental field studies and assessments;

3. Development of environmental education programs and curriculum, including programs curriculum to meet the needs of diverse ethnic and cultural groups;

4. Sponsorship and management of international exchanges of teachers and other education professionals between the United States, Canada, and Mexico, involved in environmental programs and issues;

5. Maintenance or support of a library of environmental education materials, information, literature, and technologies with electronic as well as hard copy accessibility;

6. Evaluation and dissemination of environmental education materials, training methods, and related programs;

7. Sponsorship of conferences, seminars, and related forums for the advancement and development of environmental education and training curricula and materials, including international conferences, seminars, and forums;

8. Supporting effective partnerships and networks and the use of distant learning technologies; and

9. Such other activities as the Administrator determines to be consistent with the policies of this Act.

Special emphasis should be placed on developing environmental education programs, workshops, and training tools that are portable and can be broadly disseminated.

Any institution of higher education or other institution (or consortium of such institutions), which is a not-for-profit organization and is interested in receiving a grant under Section 5 of the Act, may submit to the Administrator an application in such form and containing such information as the Administrator may require (see appendix H for instructions).

The Administrator shall award grants to institutions and groups, under this section, that demonstrate qualities as follows:

- The capability to develop environmental education and training programs,

- The capability to deliver training to a range of participants and in a range of settings,

- o The expertise of the staff in a range of appropriate disciplines,
- o The relative economic effectiveness of the program in terms of the ratio of overhead costs to direct services, and
- o The capability to make effective use of existing national environmental education resources and programs.

A logical sequence of events follows:

Individuals eligible for participation in the program are: teachers, faculty, administrators, and related support staff associated with local education agencies, colleges, and universities; employees of State Departments of Education, Environmental Protection, and Natural Resources; and employees of not-for-profit organizations involved in environmental education activities and issues.

The Administrator may enter into a cooperative agreement or contract, or provide financial assistance in the form of a grant, to support various projects to design, demonstrate, or disseminate practices, methods, or techniques related to environmental education and training.

The Administrator will award grants based on the priority as listed in Section 9(d) of the Act.

The normal implementation procedure, then, for PLT is that it is introduced into a new state through agreement among its national office, cosponsors, and usually the state education agency. Cosponsors are the American Forest Council (AFC) and the WREEC. The start up and implementation costs have typically been provided by AFC, frequently with the cooperation of state forestry groups, industry, environmental educational associations, local school districts, private conservation organizations, universities, and the state department of education.

Various courses of action can take place in Missouri such as one group or agency can sponsor the program for the entire state or several groups can form a consortium for the same purpose.

As previously stated, in 1970, the federal government determined that there was a ""deterioration of the Nation's ecological balance, severe enough to pose a threat to the American people" which was in part due to "a poor understanding of the Nation's environment and the need for ecological balance."" On November 16, 1990, the NEEA was passed for several reasons. Congress found that "effective response to complex environmental problems requires understanding of the natural and built environment, awareness of environmental problems and their origins (including those in urban

areas), and the skills to solve these problems." Another finding of Congress is that "current federal efforts to inform and educate the public concerning the natural and built environment and environmental problems are not adequate." (NEEA 1990) There is not only a need for greater public awareness and education about environmental issues and the environment in general but a severe need for rational and balanced decisions on environmental issues facing the nation now and in the future.

A poll of 287 Missouri teachers revealed that 56% believe that their students are not learning how to think for themselves, they are not learning critical thinking skills (see Table 4). A poll of 1,756 Missouri school children (see Table 6) revealed that 40% of the children in kindergarten through grade 8 do not enjoy school, and 40% feel that learning in school is not fun at all. In the same poll, 45% of the grades 9 through 12 felt *school was not fun* and 47% of them felt *learning in school* was just not fun. (see Tables 5a and 5b).

TABLE 4. Missouri Teachers' Responses

	Yes (%)	No (%)	Neutral (%)	Total (%)
Are children learning critical thinking skills?	31	56	13	100
Do children enjoy school learning?	72	28	--	100
What percent of class time is spent outdoors?	--	--	--	9
What percent of class time is spent on hands-on activities?	--	--	--	31

TABLE 5a. Missouri Children and Young People's Responses

Is school fun?	In percent K-8	9-12
Yes	60	55
No	40	45

TABLE 5b. Missouri Children's and Young People's Responses

Is learning fun?	In percent K-8	9-12
Yes	60	53
No	40	47

TABLE 6. Breakdown of Missouri Children's and Young People's Responses by Grade

Grade level	No. of responses
Kindergarten through 8	1,296
Grades 9 through 12	460
TOTAL	1,756

Granted, over one-half of the students polled enjoy school and learning in school but the numbers should be much higher. The above poll indicates that Missouri students

need some new teaching techniques in an effort to assist them in the learning process and give the system a boost in terms of stimulating the minds of our youth to think for themselves and enjoy the learning journey.

PLT is but one of many tools that can address the issues previously mentioned. PLT has been proven to be an effective and positive tool for use by anyone who deals with young people. Young people like the "nontraditional" way of learning and so do educators. The natural resource management community also receives an added perk, because, with the use of PLT and other like programs, the future adults of America will be able to think for themselves and make wise, informed, well thought out, and balanced decisions about our natural resources.

When people learn about PLT, it is as if a fire had begun to burn within them because they understand the magnificent potential of such a program for everyone, but most of all for the children. Missouri will have PLT one day because the fire has begun to burn in the hearts of teachers and others in the geographical corners of the state and it is slowly moving through the state. It is simply a matter of time and it is my great desire that the time is now. Every year sees a new generation of children starting school without PLT, and each year that they go without PLT reinforces the type of environmental ignorance we see in America today....the kind that Congress found so wide spread that they passed a law to change it. When will we take a stand to insure that our environmental ethics do not degenerate into empty words from a lack of awareness, education, and true concern for America's enduring resources?

The ultimate benefits of instituting PLT include environmental awareness among young people which eventually passes into other segments of society. Therefore, the futuristic outlook centers on greater appreciation, sensitivity, knowledge of natural resources, and man's interdependence with the natural world we inhabit, as well as the physical world we utilize. Simply put, when people are environmentally knowledgeable and ecologically minded, there is less conflict between polarized viewpoints and more cooperation between different user groups in an effort to share the land to which we have ownership.

My recommendations for PLT in Missouri are as follows:

o o o A consortium sponsor the program with the lead agency being MDC. Set up a steering committee composed of representatives from interested groups and other federal or state agencies. Designate a board of directors to serve as a task force which should include at least two members of each group, agency, and university showing an interest in the program, and said board of directors be open for new members in perpetuity.

o o o Allow the group to apply for an NEEA grant to establish the program in Missouri.

o o o Have the U.S. Forest Service take a lead role in the implementation and management of PLT in Missouri.

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Appendix A -

Letter to PLT Coordinators

United States Department of Agriculture
Forest Service
Mark Twain National Forest
Potosi/Fredericktown Ranger Districts
P.O. Box 188, Potosi, Missouri 63664

Caring for the Land and Serving People

Reply to: 1560

Date: October 30, 1991

Hello, my name is Diane Oliver and I am an employee of the United States Forest Service, on the Mark Twain National Forest, located in Potosi, Missouri. I am currently working on a project in conjunction with Clemson University (Parks, Recreation, and Tourism Department), Clemson, South Carolina. This project involves a study to determine the three most beneficial aspects of Project Learning Tree (PLT), with respect to Teachers, Students, and Natural Resource Professionals.

I have been in contact with Kathy McGlauflin, in the Washington Office of the American Forest Council and PLT headquarters, and she is aware of my efforts on this project. Kathy has provided me with your name and address for this study and has approved this letter and the requests I am asking of you. This letter is being mailed to everyone on Kathy's list of State coordinators, so there may be some duplication in locations where there might be more than one lead agency for the State.

Before I go much further, I want to assure you that the request I am making is one that you can easily fulfill because I am asking for your opinion, your personal judgements, and observations. Any other information I request, you can simply have your secretary provide for me. Please relax and rest assured that you can provide what I need quite easily.

I would like to give you a brief synopsis of this project, why it has come about, and what the ultimate goals and objectives are:

Did you know that every state in the United States has adopted PLT with the exception of Missouri?

The efforts to institute PLT in the State of Missouri have been difficult and are very slow, if not standing completely still, at this stage of the process. Most of the problem stems from a lack of support from the desired

willing and able to take the program on in an experimental capacity.

You may be saying so what..., get to the point. I have been charged with conducting a research project, in a 6-month period of time, beginning October 1991. The project must solve a problem and provide some insight and recommendations for the situation at hand. I chose to do my research project on PLT and decided that it would determine the three most beneficial aspects of PLT (from the viewpoint of natural resource professionals, like yourself; from the viewpoint of teachers; and from the viewpoint of students in public schools today). I hope to have one specific, most beneficial aspect, from each group (i.e., resource professionals, teachers, and students).

What I need from you is your honest opinion to the following question:

WHAT DO YOU FEEL IS THE SINGLE MOST BENEFICIAL ASPECT OF PROJECT LEARNING TREE?

Please answer this question from your perspective, in whatever your professional field of work is, and also in your role as the State Coordinator for the program.

Certainly, if you would choose to provide three things, that is more than ok, but please indicate which is your number one choice.

Please send your answer to the above address or contact me by telephone at (314) 438-5427 between 8:00 am - 4:30 pm Central Standard Time, Monday through Friday. Or, you may contact me at my home (314) 438-4679. If I am not at home, please leave a message on my answering machine and I will get back to you.

****

In order to stay on schedule with my project and to process all the research information in a timely manner, PLEASE RESPOND WITH THE INFORMATION ON OR BEFORE NOVEMBER 14, 1991,

****

The other information I need is as follows: Please provide me with at least 5 to 10 names of teachers in your state that you feel certain are using PLT activities on a regular basis in their classroom. I need their names, current address, and telephone number where I can reach them. I will not harass anyone, but will simply send them a letter asking the same question I have asked you requesting their response from a teachers perspective. They may only use PLT activities once per year; but if they use it consistently once a year, then I would like to know their viewpoint. Obviously, I would prefer teachers who use PLT more often but anything you can provide will be greatly appreciated.

The last request I have is for a copy of your State brochure for PLT and any other publications you have with regard to the PLT program in your State. If your state has produced a video on PLT and the benefits of same, I would like to borrow a copy or purchase a copy from you, which would save me some time when I develop one for this project. My ultimate goal is to have a 2- to 5-minute video that will illustrate PLT and the results of my findings, which are the three most beneficial aspects of PLT in an effort to inform people and build some interest in PLT. If you have a video and would let me borrow it, I would certainly return it after I have viewed it. If you have a video that I could

send you a check to cover the cost).

Kathy McGlauflin has indicated that there are about 10 states with a video for the state. If your state is one that does have a video and you are unable to provide me with one, I would appreciate it if you would let me know that your state does have the video.

Thank you for your time, effort, and the thought that has gone into your reply. I know that you are very busy and I have made every effort to simplify this process for you. If you would like a copy of the results of this research project, please indicate so in your reply and I will be more than happy to send you the final results sometime in the early summer of 1992.

I would like to take this opportunity to say that I am a strong advocate and supporter of PLT and the entire program is dear to my heart. I want to simply THANK YOU for being the State Coordinator in your state and for all the efforts you go through, that rarely get noticed, to keep the program going in your area and for all the unselfish commitments you have made to support the PLT program, in an effort to upgrade the quality of our youth and the education they receive. I am certain that you have done many things that others do not know of to silently support the PLT program in your state and for that I want to say THANKS from the kids, from other resource professionals, from teachers who have discovered the wonders of PLT in their classroom, and from parents who care about the world we will leave to our children.

Sincerely,

Carol R. Heefner

for DIANE L. OLIVER
Supervisory Forester
Potosi-Fredericktown Ranger District

Appendix B -

Letter to MDC Education Districts

United States Department of Agriculture
Forest Service
Mark Twain National Forest
Potosi/Fredericktown Ranger Districts
P.O. Box 188, Potosi, Missouri 63664

Caring for the Land and Serving People

Reply to: 1560

Date: October 15, 1991

I am in the process of conducting research with regard to natural resource education. I am seeking specific natural resource education programs, in an effort to study the existing curriculum being used in public school systems.

Would you please send me copies of the existing programs being used in Missouri public schools (those that have been generated, developed, designed, and instituted as a service of the Missouri Department of Conservation). I realize that this request might be very difficult to fulfill; and, if by chance the number of programs now being used is greater than five, perhaps you could send me the five most used programs. If there is only one main curriculum/program that contains the many facets of natural resource education, perhaps you could send me a copy of it.

The information that I need is as follows:

1) The curriculum that the teacher uses as a baseline, as developed by MDC.

2) The manner in which the schools utilize the program, to the best of your knowledge (i.e., mandatory or teachers preference).

3) Some examples (3-5) of the teaching materials provided by MDC (i.e., coloring books, fire safety comic books posters, etc.).

4) The overall objective of the specific program with regard to the effects it should produce in school age children, from MDC's point of view (i.e., kids should not play with matches, etc.).

I am grateful for your help on this project and your expedient response will facilitate the short turnaround time I have for the completion of this research. If at all possible, I would greatly appreciate receiving this information on or before November 8, 1991.

If you would like to see the results of this research project, I will be happy to send you a final copy, which would be sometime in the early summer of 1992. Please indicate if you want copies, with your response.

Thank you so very much for your help.

Diane L. Oliver

DIANE L. OLIVER

Appendix C -

Letter to Teachers

United States Department of Agriculture
Forest Service
Mark Twain National Forest
Potosi/Fredericktown Ranger Districts
P.O. Box 188, Potosi, Missouri 63664

Caring for the Land and Serving People

ply to: 1560 Date: November 20, 1991

Subject: Project Learning Tree Request

To: *

Hello, my name is Diane Oliver and I am an employee of the United States Forest Service, on the Mark Twain National Forest, located in Potosi, Missouri. I am currently working on a project in conjunction with Clemson University, Parks, Recreation and Tourism Dept., Clemson South Carolina. This project involves a study to determine the 3 most beneficial aspects of Project Learning Tree (PLT), with respect to Teachers, Students and Natural Resource Professionals.

I have been in contact with your State Coordinator, and the Washington Office of the American Forest Council and PLT headquarters, they are aware of my efforts on this project and have provided me with your name and address for this study. I requested that your state coordinator provide me with a list of names of people who they felt were using PLT activities in a learning situation with children, either in public education or resource based education such as Boy Scouts, 4-H and other similar programs.

Before I go much further I want to assure you that the request I will be making is one that you can easily fulfill because I am asking for your opinion, your personal judgements and observations. Any other information I request of you is optional and you do not have to participate if you do not want to. I have made every attempt to simplify your efforts and have enclosed a self-addressed, self-stamped envelope for your reply.

I would like to give you a brief synopsis of this project, why it has come about and what the ultimate goals and objectives are.
Did you know that every state in the United States has adopted PLT with the exception of Missouri?

The efforts to institute PLT in the state of Missouri have been difficult and are very slow if not standing completely still, at this stage of the process. Most of the problem stems from a lack of support from the desired lead agency and the search for a conglomerate of groups and agencies, willing and able to take the program on in an experimental capacity.

So; you may be saying so what..., get to the point? I have been charged with conducting a research project, in a 6 month period of time, beginning in October 1991. The project must solve a problem and provide some insight and recommendations for the situation at hand. I chose to do my research project on Project Learning Tree and decided that it would determine the 3 most beneficial aspects of PLT, from the viewpoint of natural resource professionals, from the viewpoint of teachers and users of PLT activities, like yourself, and from the viewpoint of students in public schools and young people who experience PLT activities in some aspect of their life today. I hope to have one specific, most beneficial aspect, from each group (ie. resource professionals, teachers and students).

What I need from you is your honest opinion to the following question:
WHAT DO YOU FEEL IS THE SINGLE MOST BENEFICIAL ASPECT OF PROJECT LEARNING TREE?
Please answer it from your perspective, in whatever your professional field of work is, also in your role as the teacher, educator, parent or other capacity from which you use PLT activities.
Now if you would like to provide 3 things that is ok, but please indicate which is your number one choice.
You may send me your answer in writing by using the enclosed envelope or you may call me on the Phone at 314-438-5427 between 8-4:30 Central Standard Time, Monday-Friday. You may contact me at home at 314-438-4679, if I am not there, you may leave a message on my answering machine.

****

I NEED THIS INFORMATION ON OR BEFORE DECEMBER 11, 1991, in order to stay on schedule with my project, and to process all the research information in a timely manner.

****

I will be polling students, children, PLT activity participants, nationwide and would like to know if you would be willing to poll your class(s) as part of this study. I will develop a survey form that can be filled out by individuals or by entire classroom consensus, which will help me to understand what children think of PLT activities, so that I can compare that with children who do not experience PLT activities.
Please indicate whether you would be interested in a poll of your classes, schools or the children you deal with, when you reply to the above question. I need to poll a minimum of 420 students but would prefer at least 1000 students or more. If you choose to be involved in a student poll, I will mail you the form(s) necessary and you will only need to poll the participants and return them to me.

I am also seeking interested groups in the following states: Oklahoma, Arkansas, Illinois, Kentucky, Tennessee, Kansas, to be involved in a video that will also be apart of this study. I am looking in these states because they are the closest neighbors to Missouri and would be the most cost efficient areas to visit for the purpose of filming.
I am not completely certain of the method I will use for the video but would like to know if you have a class or group that could be filmed in a candid manner, so as to enhance the video quality and character. If you would be interested in this option, please indicate so in your reply.
My ultimate goal is to have a 10-20 minute video that will illustrate PLT and the results of my findings, from the people who participated in this study.

Thank you for your time, effort, and the thought that has gone into your reply, I know that you are very busy and I have made every effort to simplify this process for you.

I would like to take this opportunity to say that I am a strong advocate and supporter of PLT and the entire program is dear to my heart. I want to simply THANK YOU for being the people who influence our children and teach them how to think and how to live carefully in this complex world we all share. Thanks for the efforts you go through, that rarely get noticed, to keep the program going, in your area. For all the unselfish commitments you have made to support the PLT program, in an effort to upgrade the quality of our youth and the education they receive. I am certain that you have done many things that others do not know of, to silently support the PLT program and responsible education in your area of expertise. I want to say THANKS from the kids, from other resource professionals, from other teachers and PLT advocates who have discovered the wonders of PLT in their classroom or group setting, and from parents who care about the world we will leave for our children.

Sincerely,

DIANE L. OLIVER
Supervisory Forester
Potosi-Fredericktown Ranger District

Appendix D -

Survey Form for PLT Children

USING YOUR OWN WORDS AND PERSONAL OPINIONS, PLEASE ANSWER EACH PART OF THE QUESTION AS FULLY AS YOU CAN. Should you need more space, put the number of the question on the back and finish your response.

1. Can you remember the last time you sat under a tree, or looked into the clouds and did some daydreaming outside? Can you remember the feelings clearly or is it sort of foggy?

2. Why is it important for people to stop soil from eroding and washing into streams, rivers, lakes, and oceans?

   What effect does soil erosion have on your personal health?

   What effect does soil erosion have on the cost of buying corn on the cob, in the grocery store?

3. How do you think the land looked before the white man came to America?

   How does that image differ from what the land looks like now in America (in your home town)?

   How do you think the land will look when you reach the age of your parents and grandparents?

4. Have you ever heard of the "greenhouse effect"? __YES __NO
   Do you know what it means? __YES __NO
   What do you feel we should do as a city or a country to stop the greenhouse effect?

5. What do you think would happen if people were never allowed to use wood again?

6. Name some kinds of environmental pollution?

   How does litter affect the beach where you swim, or the park you visit?

   What should we, as Americans, do with all of our garbage when the dump sites are full and there are no more safe places to bury it?

7. What do you think you can do to stop the greenhouse effect?

What do you think you can do to slow down the filling up of America's garbage dumps?

Do you recycle?

If so, how long have you been recycling?

Have you decided to change the way you think, feel, or do things as a result of a recent concern for the environment? __YES __NO
If so, when did you decide to make a change?

8. Do you like using PLT activities in your classroom studies? __YES __NO

9. Why do you like the PLT activities?

10. What is the **ONE BEST THING** about PLT activities you like the most?

Due to the short suspense, I have decided to enclose the form with this letter, if you feel that you would like to participate in the poll of young people, please use this form to do so. If you do not or cannot participate in the poll, please disregard (I do hope you will take a little time and at least poll one of your groups). The more opinions I receive the better able I am to determine the real benefits of PLT, from the ones who are experiencing it first hand. Should you decide to participate, I want to thank you in advance as I realize that this poll may take a while to complete.

I need to know how many participants are involved in the input, so if you ask your whole group(s) the questions collectively, please indicate the number of students you polled, the age group they are in, the grade/skill level they are in, and whether these are classroom students or resource-based groups such as boy scouts. If the participants are not capable of responding individually (too young to write), you may poll them by groups. If the group consensus is divided, a seperate response for each of the different views is necessary. For a more diverse response, please allow the older students to respond individually (by photo-copying the form).

Enclosed you will find a self-adressed, post-paid envelope which is for your personal reply and poll if just a few. If the number of responses weigh more than our postage, please forward in a different envelope. If your budget will not allow the cost of mailing the poll forms back to me, and the PLT coordinators for your state/area will not reimburse you, please obtain a receipt from the post office and return it to me (with your reply), and we (the U.S. Forest Service) will reimburse your expense.

I do not want any minor hinderances to prevent you from responding or from polling as many young people as you can, so I have made every possible effort to simplify this process for you. If I can be of any service, please call me collect (as shown in the cover letter). You may call me from December 13, 1991, through January 21, 1992, at (601) 863-1789.

I need your reply and completed poll forms on or before January 13, 1992, in order to process all of the data and begin the final write-up and resultant documentation. I appologize for this short suspense. If you do not poll any students, please send in your response on or before December 11, 1991, as indicated in the cover letter.

I know your time is valuable and is already being overstressed. I personally would like to thank you in advance for your unselfesh attitude and willingness to cooperate so fully.

Sincerely,

/s/Diane L. Oliver

Appendix E -

Letter to Missouri Teachers

Hello, my name is Diane Oliver and I am an employee of the United States Forest Service, Mark Twain National Forest, Potosi Ranger District, Potosi, Missouri. I am currently working on a project in conjunction with Clemson University (Parks, Recreation, and Tourism Department), Clemson, South Carolina. This project must solve a problem and provide some insight and recommendations for the situation at hand.

Before I go much further, I want to assure you that the request (which is confidential) I will be making is one that you can easily fulfill because I am asking for your opinion, your personal judgements, and observations. Any other information I request of you is optional and you do not have to participate if you do not feel you want to. I have made every attempt to simplify your efforts and have enclosed a self-addressed, self-stamped envelope for your reply.

I decided the project would determine the three most beneficial aspects of school (from the viewpoint of natural resource professionals; teachers, like yourself; and students in public schools). I hope to have one specific, most beneficial aspect from each group.

What I need from you is your honest opinion to the following question:

WHAT DO YOU FEEL IS THE SINGLE MOST BENEFICIAL ASPECT OF SCHOOL?

Please answer this question from your perspective as the teacher, the educator, or the parent.

Now, if you would like to provide three things, that would be wonderful just indicate which is your number "ONE" choice.

You may send your answer in writing in the enclosed envelope or call me at (314) 438-4679 (if I am not home, please leave a message on my answering machine).

****

In order for me to stay on schedule with my project and to process all the research information in a timely manner, I WILL NEED THIS INFORMATION ON OR BEFORE January 17, 1992.

****

I am also polling students and would like to know if you would be willing to poll your class(s) as part of this study. I have developed a survey form (enclosed) that can be filled out by individuals or by entire classroom consensus, which will help me to understand what children think of school. (One section is to be filled out by the students and the other section by you as their teacher.)

I need to poll a minimum of 420 students but would prefer at least 1,000 students or more.

Also as part of this study, I am seeking interested groups to be involved in a video. I am not completely certain of the method I will use for the video but would like to know if you have a class or group that could be filmed in a candid manner, so as to enhance the video quality and character. If you would be interested in this option, please indicate so in your reply. My ultimate goal is to have a 10- to 20-minute video on students interacting in the classroom.

Thank you for your time, effort, and the thought that has gone into your reply. I know that you are very busy and I have made every effort to simplify this process for you.

I want to simply **THANK YOU** for being one of the many people who influence our children and teach them how to think and how to live carefully in this complex world we all share. Thanks for the efforts you go through, that rarely get noticed, and for all the unselfish commitments you have made in an effort to upgrade the quality of our youth and the education they receive. I am certain that you have done many things, that others do not know of, to silently support the school system and responsible education in your area of expertise. I want to say THANKS from the kids, other resource professionals, other teachers, and from parents who care about the world we will leave for our children.

Sincerely,

/S/ DIANE L. OLIVER
Supervisory Forester
Potosi-Fredericktown Ranger District

Enclosure

Appendix F -

Survey Form for Missouri Teachers

- CONFIDENTIAL INFORMATION -

TEACHERS SURVEY

USING YOUR OWN WORDS AND PERSONAL OPINIONS, PLEASE ANSWER EACH PART OF THE QUESTION AS FULLY AS YOU CAN. Should you need more space, put the number of the question on the back and finish your response.

1. Do your students learn critical learning skills effectively (i.e., how to think NOT why to think?

2. What percent of classtime is spent in hands-on activities (especially practical activities)? ____%

3. Are students learning easily or with difficulty? (On the average.)

4. Do students enjoy school learning? (On the average.)

5. What percent of classtime is spent in outdoor activities?

   School grounds: ____%

   Natural environment: ____%

6. Do you recycle?

   If so, how long have you been recycling?

   Have you decided to change the way you think, feel, or do things as a result of a recent concern for the environment? __YES __NO
   If so, when did you decide to make a change?

Appendix G -

Survey Form for Missouri Children

I need to know how many participants are involved in the input, so if you ask your whole group(s) the questions collectively, please indicate the number of ants you polled, the age group they are in, the grade/skill level they are and whether these are classroom students or resource-based groups such as boy scouts. If the participants are not capable of responding individually (too young to write), you may poll them by groups. If the group consensus is divided, a seperate response for each of the different views would be greatly appreciated. For a more diverse response, please allow the older students to respond individually (by photo-copying the form).

Enclosed you will find a self-adressed, post-paid envelope which is for your personal reply and poll, if just a few. If the number of responses weigh more than our postage, please forward in a different envelope. If your budget will not allow the cost of mailing the poll forms back to me, please obtain a receipt from the post office and return it to me (with your reply), and we (the U.S. Forest Service) will reimburse your expense.

I do not want any minor hinderances to prevent you from responding or from polling as many young people as you can, so I have made every possible effort to simplify this process for you. If I can be of any service, please call me collect (as shown in the cover letter). You may call me from December 13, 1991, through January 21, 1992, at (601) 863-1789.

I need your reply and completed poll forms on or before January 17, 1992, in order to process all of the data and begin the final write-up and resultant documentation. I appologize for this short suspense.

I know your time is valuable and is already being overstressed. I personally 'd like to thank you in advance for your unselfesh attitude and willingness ooperate so fully.

Sincerely,

/s/Diane L. Oliver

- CONFIDENTIAL INFORMATION -

STUDENTS SURVEY

USING YOUR OWN WORDS AND PERSONAL OPINIONS, PLEASE ANSWER EACH PART OF THE QUESTION AS FULLY AS YOU CAN. Should you need more space, put the number of the question on the back and finish your response.

1. Can you remember the last time you sat under a tree, or looked into the clouds and did some daydreaming outside? Describe the feelings at that time.

2. Why is it important for people to stop soil from eroding and washing into streams, rivers, lakes, and oceans?

   What effect does soil erosion have on your personal health?

   What effect does soil erosion have on the cost of buying corn on the cob, in the grocery store?

3. How do you think the land looked before the white man came to America?

   How does that image differ from what the land looks like now in America (in your home town)?

   How do you think the land will look when you reach the age of your parents and grandparents?

4. Have you ever heard of the "greenhouse effect"? __YES __NO
   Do you know what it means? __YES __NO
   What do you feel we should do as a city or a country to stop the greenhouse effect?

5. What do you think would happen if people were never allowed to use wood again?

6. Name some kinds of environmental pollution?

   How does litter affect the beach where you swim, or the park you visit?

   What should we as Americans do with all of our garbage when the dump sites are full and there is no more safe places to bury it?

7. What do you think you can do to stop the greenhouse effect?

What do you think you can do to slow down the filling up of America's garbage dumps?

Does your family recycle?

If so, how long has your family been recycling?

Have you decided to change the way you think, feel, or do things as a result of a recent concern for the environment? __YES __NO
If so, when did you decide to make a change?

8. Do you like school? __YES __NO

9. Do you think learning is fun? __YES __NO

10. How often do you go outside for classroom activities?

11. Do you learn mostly what your teacher tell you? (10% is the most and 1% is the least.) _____%

Do you learn and discover things on your own? (10% is the most and 1% is the least.) _____%

Appendix H -

National Environmental Education Act and Suppliments

S. 3176

PUBLIC LAW 101-61

One Hundred First Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Tuesday, the twenty-third day of January, one thousand nine hundred and ninety

An Act

To promote environmental education, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE AND TABLE OF CONTENTS.

(a) TITLE.—This Act may be cited as the "National Environmental Education Act".

(b) TABLE OF CONTENTS.—

SEC. 2. FINDINGS AND POLICY.

(a) FINDINGS.—The Congress finds that—

(1) Threats to human health and environmental quality are increasingly complex, involving a wide range of conventional and toxic contaminants in the air and water and on the land.

(2) There is growing evidence of international environmental problems, such as global warming, ocean pollution, and declines in species diversity, and that these problems pose serious threats to human health and the environment on a global scale.

(3) Environmental problems represent as significant a threat to the quality of life and the economic vitality of urban areas as they do the natural balance of rural areas.

(4) Effective response to complex environmental problems requires understanding of the natural and built environment, awareness of environmental problems and their origins (including those in urban areas), and the skills to solve these problems.

(5) Development of effective solutions to environmental problems and effective implementation of environmental programs requires a well educated and trained, professional work force.

(6) Current Federal efforts to inform and educate the public concerning the natural and built environment and environmental problems are not adequate.

(7) Existing Federal support for development and training of professionals in environmental fields is not sufficient.

(8) The Federal Government, acting through the Environmental Protection Agency, should work with local education institutions, State education agencies, not-for-profit educational and environmental organizations, noncommercial educational

broadcasting entities, and private sector interests to support development of curricula, special projects, and other activities, to increase understanding of the natural and built environment and to improve awareness of environmental problems.

(9) The Federal Government, acting through the coordinated efforts of its agencies and with the leadership of the Environmental Protection Agency, should work with local education institutions, State education agencies, not-for-profit educational and environmental organizations, noncommercial educational broadcasting entities, and private sector interests to develop programs to provide increased emphasis and financial resources for the purpose of attracting students into environmental engineering and assisting them in pursuing the programs to complete the advanced technical education required to provide effective problem solving capabilities for complex environmental issues.

(10) Federal natural resource agencies such as the United States Forest Service have a wide range of environmental expertise and a long history of cooperation with educational institutions and technology transfer that can assist in furthering the purposes of the Act.

(b) POLICY.—It is the policy of the United States to establish and support a program of education on the environment, for students and personnel working with students, through activities in schools, institutions of higher education, and related educational activities, and to encourage postsecondary students to pursue careers related to the environment.

SEC. 3. DEFINITIONS.

For the purposes of this Act, the term—

(1) "Administrator" means the Administrator of the Environmental Protection Agency;

(2) "Agency" means the United States Environmental Protection Agency;

(3) "Federal agency" or "agency of the United States" means any department, agency or other instrumentality of the Federal Government, any independent agency or establishment of the Federal Government including any Government corporation;

(4) "Secretary" means the Secretary of the Department of Education;

(5) "local education agency" means any education agency as defined in section 198 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 3381) and shall include any tribal education agency;

(6) "not-for-profit" organization means an organization, association, or institution described in section 501(c)(3) of the Internal Revenue Code of 1986, which is exempt from taxation pursuant to the provisions of section 501(a) of such Code;

(7) "noncommercial education broadcasting entities" means any noncommercial educational broadcasting station (and/or its legal nonprofit affiliates) as defined and licensed by the Federal Communications Commission;

(8) "tribal education agency" means a school or community college which is controlled by an Indian tribe, band, or nation, including any Alaska Native village, which is recognized as eligible for special programs and services provided by the

United States to Indians because of their status as Indians and which is not administered by the Bureau of Indian Affairs;

(9) "Federal natural resource management agencies" means the United States Forest Service, the Bureau of Land Management, the National Park Service, and the Fish and Wildlife Service;

(10) "environmental engineering" means the discipline within engineering and science concerned with the development and application of scientific and technical solutions to protecting the aquatic and atmospheric environment, including, but not limited to, all phases of water resources planning, water supply, water treatment, air pollution characterization and control, remediation of hazardous substances, environmental transport of contaminants in surface and ground water and atmosphere, and methods for assessment and control of pollution;

(11) "environmental education" and "environmental education and training" mean educational activities and training activities involving elementary, secondary, and postsecondary students, as such terms are defined in the State in which they reside, and environmental education personnel, but does not include technical training activities directed toward environmental management professionals or activities primarily directed toward the support of noneducational research and development;

(12) "Foundation" means the National Environmental Education and Training Foundation established pursuant to section 10 of this Act; and

(13) "Board of Directors" means the Board of Directors of the National Environmental Education and Training Foundation.

SEC. 4. OFFICE OF ENVIRONMENTAL EDUCATION.

(a) The Administrator shall establish an Office of Environmental Education within the Environmental Protection Agency.

(b) The Office of Environmental Education shall—

(1) develop and support programs and related efforts, in consultation and coordination with other Federal agencies, to improve understanding of the natural and built environment, and the relationships between humans and their environment, including the global aspects of environmental problems;

(2) support development and the widest possible dissemination of model curricula, educational materials, and training programs for elementary and secondary students and other interested groups, including senior Americans;

(3) develop and disseminate, in cooperation with other Federal agencies, not-for-profit educational and environmental organizations, State agencies, and noncommercial educational broadcasting entities, environmental education publications and audio/visual and other media materials;

(4) develop and support environmental education seminars, training programs, teleconferences, and workshops for environmental education professionals, as provided for in section 5 of this Act;

(5) manage Federal grant assistance provided to local education agencies, institutions of higher education, other not-for-profit organizations, and noncommercial education broadcasting entities, under section 6 of this Act;

(5) maintenance or support of a library of environmental education materials, information, literature, and technologies, with electronic as well as hard copy accessibility;

(6) evaluation and dissemination of environmental education materials, training methods, and related programs;

(7) sponsorship of conferences, seminars, and related forums for the advancement and development of environmental education and training curricula and materials, including international conferences, seminars, and forums;

(8) supporting effective partnerships and networks and the use of distant learning technologies; and

(9) such other activities as the Administrator determines to be consistent with the policies of this Act.

Special emphasis should be placed on developing environmental education programs, workshops, and training tools that are portable and can be broadly disseminated.

(c)(1) The Administrator shall make a grant on an annual basis to an institution of higher education or other institution which is a not-for-profit institution (or consortia of such institutions) to operate the environmental education and training program required by this section.

(2) Any institution of higher education or other institution (or consortia of such institutions) which is a not-for-profit organization and is interested in receiving a grant under this section may submit to the Administrator an application in such form and containing such information as the Administrator may require.

(3) The Administrator shall award grants under this section on the basis of—

(A) the capability to develop environmental education and training programs;

(B) the capability to deliver training to a range of participants and in a range of settings;

(C) the expertise of the staff in a range of appropriate disciplines;

(D) the relative economic effectiveness of the program in terms of the ratio of overhead costs to direct services;

(E) the capability to make effective use of existing national environmental education resources and programs;

(F) the results of any evaluation under paragraph (5) of this subsection; and

(G) such other factors as the Administrator deems appropriate.

(4) No funds made available to carry out this section shall be used for the acquisition of real property (including buildings) or the construction or substantial modification of any building.

(5) The Administrator shall establish procedures for a careful and detailed review and evaluation of the environmental education and training program to determine whether the quality of the program being operated by the grantee warrants continued support under this section.

(d)(1) Individuals eligible for participation in the program are teachers, faculty, administrators and related support staff associated with local education agencies, colleges, and universities, employees of State education, environmental protection, and natural resource departments, and employees of not-for-profit organizations involved in environmental education activities and issues.

trator shall publish regulations to assure satisfactory implementation of each element of the program authorized by this section.

(e) Within 90 days after the date on which amounts are first appropriated for carrying out this Act, and each year thereafter, the Administrator shall publish a solicitation for environmental education grants. The solicitation notice shall prescribe the information to be included in the proposal and other information sufficient to permit the Administrator to assess the project.

(f) Any local education agency, college or university, State education agency or environmental agency, not-for-profit organization, or noncommercial educational broadcasting entity may submit an application to the Administrator in response to the solicitations required by subsection (e) of this section.

(g) Each project under this section shall be performed by the applicant, or by a person satisfactory to the applicant and the Administrator.

(h) Federal funds for any demonstration project under this section shall not exceed 75 percent of the total cost of such project. For the purposes of this section, the non-Federal share of project costs may be provided by inkind contributions and other noncash support. In cases where the Administrator determines that a proposed project merits support and cannot be undertaken without a higher rate of Federal support, the Administrator may approve grants under this section with a matching requirement other than that specified in this subsection, including full Federal funding.

(i) Grants under this section shall not exceed $250,000. In addition, 25 percent of all funds obligated under this section in a fiscal year shall be for grants of not more than $5,000.

SEC. 7. ENVIRONMENTAL INTERNSHIPS AND FELLOWSHIPS.

(a) The Administrator shall, in consultation with the Office of Personnel Management and other appropriate Federal agencies, provide for internships by postsecondary level students and fellowships for in-service teachers with agencies of the Federal Government.

(b) The purpose of internships and fellowships pursuant to this section shall be to provide college level students and in-service teachers with an opportunity to work with professional staff of Federal agencies involved in environmental issues and thereby gain an understanding and appreciation of such issues and the skills and abilities appropriate to such professions.

(c) The Administrator shall, to the extent practicable, support not less than 250 internships each year and not less than 50 fellowships each year.

(d) The internship and fellowship programs shall be managed by the Office of Environmental Education. Interns and fellows may serve in appropriate agencies of the Federal Government including, but not limited to, the Environmental Protection Agency, the Fish and Wildlife Service, the National Oceanic and Atmospheric Administration, the Council on Environmental Quality, Federal natural resource management agencies, the Department of Agriculture, and the National Science Foundation.

(e) Interns shall be hired on a temporary, full-time basis for not to exceed 6 months and shall be compensated appropriately. Fellows shall be hired on a temporary full-time basis for not to exceed 12 months and shall be compensated appropriately. Federal agencies

section, which shall be used to further the recipient's professional development in environmental education.

(3) The Chairman is also authorized to provide a cash award of up to $2,500 to the local education agency employing any teacher selected to receive an award pursuant to this section, which shall be used to fund environmental educational activities and programs. Such awards may not be used for construction costs, general expenses, salaries, bonuses, or other administrative expenses.

SEC. 9. ENVIRONMENTAL EDUCATION ADVISORY COUNCIL AND TASK FORCE.

(a) There is hereby established a National Environmental Education Advisory Council and a Federal Task Force on Environmental Education.

(b)(1) The Advisory Council shall advise, consult with, and make recommendations to, the Administrator on matters relating to activities, functions, and policies of the Agency under this Act. With respect to such matters, the Council shall be the exclusive advisory entity for the Administrator. The Council may exchange information with other Advisory Councils established by the Administrator. The Office of Environmental Education shall provide staff support to the Council.

(2) The Advisory Council shall consist of 11 members appointed by the Administrator after consultation with the Secretary. Two members shall be appointed to represent primary and secondary education (one of whom shall be a classroom teacher); two members shall be appointed to represent colleges and universities; two members shall be appointed to represent not-for-profit organizations involved in environmental education; two members shall be appointed to represent State departments of education and natural resources; two representatives shall be appointed to represent business and industry; and one representative shall be appointed to represent senior Americans. A representative of the Secretary shall serve as an ex officio member of the Advisory Council. The conflict of interest provision at section 208(a) of title 18, United States Code, shall not apply to members' participation in particular matters which affect the financial interests of employers which they represent pursuant to this subsection.

(3) The Administrator shall provide that members of the Council represent the various geographic regions of the country, has minority representation, and that the professional backgrounds of the members include scientific, policy, and other appropriate disciplines.

(4) Each member of the Advisory Council shall hold office for a term of 3 years, except that—

(A) any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term; and

(B) the terms of the members first taking office shall expire as follows: four shall expire 3 years after the date of enactment of this Act, four shall expire 2 years after such date, and three shall expire 1 year after such date, as designated by the Administrator at the time of appointment.

(5) Members of the Advisory Council appointed under this section shall, while attending meetings of the Council or otherwise engaged in business of the Council, receive compensation and allowances at a rate to be fixed by the Administrator, but not exceeding the daily equivalent of the annual rate of basic pay in effect for grade GS–18

SEC. 10. THE NATIONAL ENVIRONMENTAL EDUCATION AND TRAINING FOUNDATION.

(a) ESTABLISHMENT AND PURPOSES.—

(1) ESTABLISHMENT.—(A) There is hereby established the National Environmental Education and Training Foundation. The Foundation is established in order to extend the contribution of environmental education and training to meeting critical environmental protection needs, both in this country and internationally; to facilitate the cooperation, coordination, and contribution of public and private resources to create an environmentally advanced educational system; and to foster an open and effective partnership among Federal, State, and local government, business, industry, academic institutions, community based environmental groups, and international organizations.

(B) The Foundation is a charitable and nonprofit corporation whose income is exempt from tax, and donations to which are tax deductible to the same extent as those organizations listed pursuant to section 501(c) of the Internal Revenue Code of 1986. The Foundation is not an agency or establishment of the United States.

(2) PURPOSES.—The purposes of the Foundation are—

(A) subject to the limitation contained in the final sentence of subsection (d) herein, to encourage, accept, leverage, and administer private gifts for the benefit of, or in connection with, the environmental education and training activities and services of the United States Environmental Protection Agency;

(B) to conduct such other environmental education activities as will further the development of an environmentally conscious and responsible public, a well-trained and environmentally literate workforce, and an environmentally advanced educational system;

(C) to participate with foreign entities and individuals in the conduct and coordination of activities that will further opportunities for environmental education and training to address environmental issues and problems involving the United States and Canada or Mexico.

(3) PROGRAMS.—The Foundation will develop, support, and/or operate programs and projects to educate and train educational and environmental professionals, and to assist them in the development and delivery of environmental education and training programs and studies.

(b) BOARD OF DIRECTORS.—

(1) ESTABLISHMENT AND MEMBERSHIP.—(A) The Foundation shall have a governing Board of Directors (hereafter referred to in this section as "the Board"), which shall consist of 13 directors, each of whom shall be knowledgeable or experienced in the environment, education and/or training. The Board shall oversee the activities of the Foundation and shall assure that the activities of the Foundation are consistent with the environmental and education goals and policies of the Environmental Protection Agency and with the intents and purposes of this Act. The membership of the Board, to the extent practicable, shall represent diverse points of view relating to environmental education and training.

Officers and employees of the Foundation shall be appointed without regard to the provisions of title 5, of the United States Code, governing appointments in the competitive service, and may be paid without regard to the provisions of chapter 51 or subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, except that no individual so appointed may receive pay in excess of the annual rate of basic pay in effect for grade GS–18 of the General Schedule.

(ii) The first officer or employee appointed by the Board shall be the Executive Director of the Foundation who—

(I) shall serve, at the direction of the Board, as the Secretary of the Board and the Foundation's chief executive officer; and

(II) shall be experienced in matters relating to environmental education and training.

(c) RIGHTS AND OBLIGATIONS OF THE FOUNDATION.—

(1) IN GENERAL.—The Foundation—

(A) shall have perpetual succession;

(B) may conduct business throughout the several States, territories, and possessions of the United States and abroad;

(C) shall have its principal offices in the District of Columbia or in the greater metropolitan area; and

(D) shall at all times maintain a designated agent authorized to accept service of process for the Foundation. The service of notice to, or service of notice upon, the agent required under paragraph (4), or mailed to the business address of such agent, shall be deemed as service upon or notice to the Foundation.

(2) SEAL.—The Foundation shall have an official seal selected by the Board which shall be judicially noticed.

(3) POWERS.—To carry out its purposes under section 10(a) of this Act, the Foundation shall have, in addition to the powers otherwise given it under this section, the usual powers of a corporation acting as a trustee, including the power—

(A) to accept, receive, solicit, hold, administer, and use any gift, devise, or bequest, either absolutely or in trust, of real or personal property or any income therefrom or other interest therein;

(B) to acquire by purchase or exchange any real or personal property or interest therein;

(C) unless otherwise required by the instrument of transfer, to sell, donate, lease, invest, reinvest, retain, or otherwise dispose of any property or income therefrom;

(D) to sue, or to be sued, and complain or defend itself in any court of competent jurisdiction, except that the Directors of the Board shall not be personally liable, except for gross negligence;

(E) to enter into contracts or other arrangements with public agencies and private organizations and persons and to make such payments as may be necessary to carry out its functions; and

(F) to do any and all acts necessary and proper to carry out the purposes of the Foundation.

(d) CONDITIONS ON DONATIONS.—

(1) For the purposes of this section, a gift, devise, or bequest may be accepted by the Foundation even though it is encum-

Foundation nor shall the full faith and credit of the United States extend to any obligation of the Foundation.

(j) AMENDMENT AND REPEAL.—The Congress expressly reserves the right to repeal or amend this section at any time.

SEC. 11. AUTHORIZATION.

(a) There is hereby authorized to be appropriated to the Environmental Protection Agency to carry out this Act not to exceed $12,000,000 for each fiscal year 1992 and 1993, not to exceed $13,000,000 for fiscal year 1994, and not to exceed $14,000,000 for each fiscal year 1995 and 1996.

(b) Of such sums appropriated in a fiscal year, 25 percent shall be available for the activities of the Office of Environmental Education, 25 percent shall be available for the operation of the environmental education and training program, 38 percent shall be available for environmental education grants, 10 percent shall be available for support of the National Environmental Education and Training Foundation, and 2 percent shall be available to support awards pursuant to section 8(e) of this Act.

(c) Funds appropriated pursuant to this section may be made available to the National Environmental Education and Training Foundation to—

(1) match partially or wholly the amount or value of contributions (whether in currency, services, or property) made to the Foundation by private persons and State and local governments; and

(2) provide administrative services under section 10(d) of this Act:

Provided, That the Administrator determines that such funds will be used to carry out the statutory purposes of the Foundation in a manner consistent with the goals, objectives and programs of this Act.

Speaker of the House of Representatives.

Vice President of the United States and
President of the Senate.

Environmental Protection Agency
Solicitation Notice for Environmental Education Grants

Lewis S. W. Crampton
Associate Administrator
Office of Communications, Education and Public Affairs

Purpose of Notice

This notice solicits applications from eligible organizations and institutions for cooperative agreements or grants to support projects to design, demonstrate, or disseminate practices, methods, or techniques related to environmental education and training as specified in Section 6 of the National Environmental Education Act (Public Law 101-619). This grants program is separate from the Environmental Education and Training Program specified in Section 5 of the Act.

Background

On November 16, 1990, the National Environmental Education Act (NEEA) was signed by the President. Section 6 of the Act requires that the Environmental Protection Agency (EPA) solicit for projects, select suitable projects from among those proposed, supervise such projects, evaluate the results of projects, and disseminate information on the effectiveness and feasibility of the practices, methods, techniques and processes. A Presolicitation Notice was published for this program on September 5, 1991.

Appropriation

NEEA requires that, of the sums Congress appropriates in a fiscal year for activities under the NEEA, 38 percent shall be available for the Environmental Education Grants program in Section 6 of the Act. Congress appropriated $6,500,000 for NEEA activities in fiscal year 1992, of which 38% is $2,470,000.

Questions and Answers

I. What is the purpose of the Environmental Education Grants?

The purpose of these grants is to stimulate environmental education by supporting projects to design, demonstrate, or disseminate practices, methods or techniques related to environmental education or training.

II. Who may submit applications?

Any local or tribal education agency, college or university, State education or environmental agency, not-for-profit organization, or noncommercial educational broadcasting entity may submit an application upon publication of this solicitation. These terms defined in Section 3 of the statute and 40 R 47.105.

III. May a teacher/educator apply?

Only organizations are eligible. Educators may have their institution or association apply on their behalf. The qualifications of those individuals participating in the proposed project will be an important factor in the selection process.

IV. What activities will be eligible for grant support?

The eligible activities shall include, but not be limited to:

1. design, demonstration, or dissemination of environmental curricula, including development of educational tools and materials;
2. design and demonstration of field methods, practices, and techniques, including assessment of environmental and ecological conditions and analysis of environmental pollution problems;
3. projects to understand and assess a specific environmental issue or a specific environmental problem;
4. provision of training or related education for teachers, faculty, or related personnel in a specific geographic area or region; and
5. design and demonstration of projects to foster international cooperation in addressing environmental issues and problems involving the United States and Canada or Mexico.

V. Which projects will have priority?

In making grants pursuant to this section, EPA shall give priority to those proposed projects which will develop:

1. a new or significantly improved environmental education practice, method, or technique;
2. an environmental education practice, method, or technique which may have wide application; and
3. an environmental education practice, method, or technique which addresses an environmental issue which, in the judgment of the EPA, is of a high priority.

VI. What are EPA's objectives for the Environmental grants?

EPA has four objectives:

1. To enhance environmental teaching skills and curricula.
2. To create partnerships and promote teamwork to improve environmental education.
3. To help the general public make informed decisions about the environment.
4. To motivate the general public to be more environmentally conscious.

VII. Who will perform projects and activities?

The statute requires that projects must be performed by a person who belongs to the organization requesting funds or someone satisfactory to the organization and EPA. All applications must identify that person for approval.

VIII. Are matching funds required?

Yes. Federal funds for projects shall not exceed 75 percent of the total cost of such projects. The non-Federal share of project costs may be provided in cash or by in-kind contributions and other noncash support. In-kind contributions often include salaries or other verifiable costs.

The matching (non-Federal) share is a percentage of the entire cost of the project. If the 75 percent Federal portion is $5,000, then the entire project would be $6,667. The recipient would provide $1,667. The amount of non-Federal funds, including in-kind contributions, must be briefly itemized in the application.

IX. How much money may be requested?

EPA is encouraging requests for "grass roots" grants of $5,000 or less. At least 25 percent of all funds obligated under this section in a fiscal year shall be for grants of not more than $5,000. The statutory ceiling for any one grant is $250,000. Since funds are limited, proposed projects over $100,000 will be extremely competitive and few in number. Most of the competitive awards will be for $25,000 or less.

X. How will the recipients be selected?

Recipients will be selected at EPA's Regional Offices and at Headquarters. Regions will select grants for $25,000 or less. EPA Headquarters will select grants for more than $25,000.

XI. When should proposed activities start?

Activities cannot start before funds are awarded. Start dates are currently targeted for June, 1992.

XII. How much time would I have to complete the project?

Funding may be requested for 12 or 24 month periods. However, flexibility is possible depending upon the nature of the project. Activities must be completed within the time frame of the budget period. Concurrent grants to the same organization during the second year are not allowed.

XIII. If my organization is awarded a grant, what reports must I complete?

All recipients will be expected to submit final reports for EPA approval prior to receipt of the balance of grant funds. Recipients of

As published on page 30444 Federal Register / Vol. 56, No. 127 / Tuesday, July 2, 1991 / Notices

An Invitation for Preproposals for The Environmental Education and Training Program

The Environmental Protection Agency (EPA) will be funding an Environmental Education and Training Program (EETP) in Fiscal Year 1992, which begins October 1, 1991. The requirement for this program is found in Section 5 of the National Environmental Education Act (NEEA), Public Law 101-619. This notice applies only to the Environmental Education and Training Program which is administratively separate from the NEEA Environmental Education Grants Program covered under Section 6 of the Act.

Under Section 5 of the Act, EPA intends to award one major grant or cooperative agreement per year to an institution of higher education or other institution (or consortia of such institutions) which is a not-for-profit organization. The award will establish a nation-wide program to stimulate improvements in environmental education and training.

This program is new and EPA wants to learn and incorporate the views and opinions of the environmental education community. The ideas in the preproposals will be evaluated and used to both qualify potential participants in the program and develop program specifications.

If you plan to submit a preproposal, please send a brief, no more than two page, letter of intent (LI) postmarked by August 1,1991.

EETP-LI
Office of Environmental Education (A107)
Environmental Protection Agency
401 M Street, SW
Washington, D.C. 20460

Background

On November 16, 1990, President Bush signed into law the National Environmental Education Act (NEEA), Public Law 101-619. The Act calls for the establishment of an Office of Environmental Education (OEE) within the Environmental Protection Agency (EPA) to develop and support environmental education seminars, training programs, teleconferences, and workshops for environmental education professionals through an Environmental Education and Training Program.

Funding

The EPA is seeking to establish a national program to

or occupational education, and topical environmental issues and problems;

2. Demonstration of the design and conduct of environmental field studies and assessments;

3. Development of environmental education programs and curriculum, including programs and curriculum to meet the needs of diverse ethnic and cultural groups;

4. Sponsorship and management of international exchanges of teachers and other educational professionals between the United States, Canada, and Mexico involved in environmental programs and issues;

5. Maintenance or support of a library of environmental education materials, information, literature, and technologies, with electronic as well as hard copy accessibility;

6. Evaluation and dissemination of environmental education materials, training methods, and related programs;

7. Sponsorship of conferences, seminars, and related forums for the advancement and development of environmental education and training curricula and materials, including international conferences, seminars, and forums;

8. Supporting effective partnerships and networks and the use of distant learning technologies; and

9. Such other activities as the Administrator determines to be consistent with the policies of this Act.

Special emphasis should be placed on developing environmental education programs, workshops, and training tools that are portable and can be broadly disseminated.

IV What will be the basis for selection and award?

Preproposals shall be evaluated, as specified in the Act, on the basis of:

1. The capability to develop environmental education and training programs;

Include in your preproposal evidence that proposed activities and functions can be done by the institutions and individuals involved in the program.

a. The program should establish a goal of self-sustainability, and demonstrate the method of achieving it.

b. If other environmental programs are funded or funding is requested from EPA or other Federal Agencies, identify them and explain how this program will relate.

c. No funds shall be used for the acquisition of real property (including buildings) or the construction or substantial modification of any building.

V Who is eligible to participate in grant funded activities?

Individuals eligible to participate in the program are teachers, faculty, administrators, and related support staff associated with local education agencies, colleges, and universities, employees of State education, environmental protection, and natural resource departments, and employees of not-for-profit organizations involved in environmental education activities and issues.

VI What must (or should not) be included in the preproposal?

To qualify for review the preproposal must include:

1. A cover letter

The individual authorized to accept a Federal cooperative agreement or grant must sign this one or two page letter.

2. A table of contents, referencing numbered pages

Even though the proproposal is 10 pages or less, a table of contents will assist reviewers.

3. Functions and activities

Briefly explain how each function and activity previously referred to in section III will be fulfilled. A matrix or table may be used to depict the schedule for carrying out activities. Also, estimate with realistic and verifiable numbers how many students and teachers will be trained by proposed functions and activities.

4. Basis for evaluation of proposal and award

Clearly describe why you should be selected by addressing each of the 7 bases of selection factors previously referred to in section IV with sufficient detail to allow a thorough review and evaluation.

IX If selected, how much time will I have to complete the activities in my grant?

You may, for planning purposes, describe multi-year projects up to three years, but you will have a year to complete funded activities proposed in the work plan. Level of funding will be decided annually.

X What must I do to receive funding in subsequent years?

Continued funding will depend upon availability of funds, your performance, and goals of the program.

XI Where should the preproposal be submitted, and who can I contact about additional information?

The original preproposal and six copies may be submitted to:

EETP-PP
Office of Environmental Education (A107)
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

A copy should also be sent to the Environmental Education Coordinator in the corresponding EPA Regional Office. EPA Regional Coordinators, names and addresses, are attached. Please include the EETP-PP code with Regional correspondence also.

If you need additional information, you may write to the address above or call George Walker, EPA, (202) 382-4484.

Lewis S. W. Crampton
Associate Administrator
Office of Communications and Public Affairs